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ABSTRACT

The document offers suggestions for developing a Strucure of Intellect (SOI) program for gifted elementary students. An introductory chapter covers the definition of SOI, rationale for using the SOI model with gifted students, purpose of the guide, assessment of intellectual ability, preparation of the SOI prescription, classroom activities based on the SOI, organization and teaching strategies, and SOI tasks to be used in remedial reading. Also provided in this initial section are resources which include a list of teachers, references, SOI classification of educational materials, an outline of Frickson Elementary School lab materials, materials list for the SOI Abilities Workbook, and the SOI Institute list of materials and services. Subsequent chapters are color coded for five areas (cognition, memory, convergent production, divergent production, and evaluation) and usually include an introduction and sections with a glossary of pertinent SOI factor definitions; a list of commercially prepared materials: descriptions of activities: and task cards (which consist of mazes, puzzles, graphs, and other instructional materials). (SBH)

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A GUIDE FOR TEACHING STRUCTURE OF THE INTELLECT IN THE GIFTED CLASSROOM

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PREFACE

The Structure of the Intellect curriculum provides a unique, qualitatively different program which is designed to meet the needs of individual students. It challenges students to perceive, to brainstorm, and to make judgments and decisions. The curriculum encourages students to approach problems in a significantly different way, to be creative, and to enjoy the pleasure of using their minds effectively in the thinking process.

It is hoped that through the use of the materials in this guide the intellectual abilities of the MGM students will be developed and their intellectual potential realized.

Scott C Gray

Scott C. Gray
Assistant Superintendent
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INTRODUCTION

INTRODUCTION

STRUCTURE OF THE INTELLECT: WHAT IS IT?

Structure of the Intellect (SOI) provides a system of testing, prescribing, and teaching based upon the division of intellectual ability into specific factors. J. P. Guilford's model of intelligence (SI) divided intellectual ability into three major dimensions: operations, contents, and products. Later, Dr. Mary Meeker refined Guilford's model into additional dimensions, and she developed an assessment instrument and curriculum for each operations (process) dimension. The factors comprising the Structure of the Intellect, as adapted from descriptions developed by Creative Prescriptions Unlimited at East Whittier, California, are presented below.

Major Processes (operations of the mind upon raw materials of information)

Code	Title	Description
C	Cognition	The most basic of the operations, it includes discovery, awareness, rediscovery, or recognition of information in various forms; comprehension; and understanding.
M	Memory	Retention of information in any form. One of the easiest of the operations to train.
N	Convergent Production	Generation of information from given information where the emphasis is upon reproducing conventionally accepted best answers or outcomes. Most school work is convergent production.
D	Divergent Production	Generation of information from given information where the emphasis is upon the variety and quality of answers. This operation is closely related to the creative process. Fluency, flexibility, and originality are important components of this operation.
E	Evaluation	Reaching decisions or making judgments concerning the correctness, suitability, adequacy, and desirability of information in terms of identity, consistency, and goal satisfaction. An area that is frequently overlooked in our schools. Teachers tend to make decisions for students, robbing them of the opportunity to make their own.

Contents (general varieties of information)

Code	Title	Description
F	Figural Content	Information in a concrete form, visual, auditory, or kinesthetic. A very important component for beginning learners.
S	Symbolic Content	Information in the form of signs, having no significance in and of themselves, such as letters, numerals, and musical notes. Relates to coding. Math is high in symbolic content.

M	Semantic Content	Information in the form of meanings to which words commonly become attached; most notable in verbal thinking and reading. Deals with the abstract.
B	Behavioral Content	Information essentially nonverbal, involved in human interactions where awareness of attitudes, need, desires, intentions, thought, and so on of other processes is important. (Behavioral content is not a part of this guide.)

Products (results obtained through the intellect's processing of information)

Code	Title	Description
U	Units	Deals with the perception of single items such as one figure, symbol, or word.
C	Classes	Items of information grouped by common properties. Classes are made up of units.
R	Relations	Recognized connections between units of information based upon variables that apply to them.
S	Systems	Organized items of information; complexes of interrelated or interacting parts. Sequences in mathematical operations or structure of language represent systems.
T	Transformations	An abstract area; involves changes in existing or known information, or in its use, requiring the redefinition or modification of information.
I	Implications	The most abstract of the products area and one that is difficult to convey. Deals with cause and effect; works with known information and its relationship with the unknown.

Charts 1-5 on the following pages present curriculum activities based on the SOI program. The trigrams for each cell (activity) are coded on activity pages for each of the five SOI operations.

The SOI Learning Abilities Test is used to assess the intellectual abilities of each student, and testing results are used to prepare an individual profile and prescription for each student. The profile illustrates the student's strengths and weaknesses, and the prescription states a plan to follow for remediation. The remediation plan pairs a weakness with an area of strength, and curriculum developed for the appropriate factors of SOI is recommended.

In summary, SOI is a program which identifies intellectual strengths and weaknesses and offers the opportunity to utilize teaching strategies and materials with the greatest potential for each student's learning abilities.

WHY SOI FOR GIFTED STUDENTS?

Where are the gifted? A student is identified as "gifted" and is placed in a special class designed to meet his/her special needs, but to what extent are teachers able to determine the strengths and needs of the student? All too often educators assume that because a student does so many things so well there are no weaknesses, for the student is only seen in comparison with others. Then there is the student who has been identified as gifted, but of whom teachers ask "How is he/she gifted?" when the student barely functions at grade level in academic achievement. How do teachers help these students? What are the true strengths of the student who seemingly does everything so well? When the IQ score seems to be a paradox, how can the student's gifts be discovered? How does a teacher plan a program to meet the needs of a student based on a score measuring IQ?

Through the use of the SOI program, teachers obtain more than an IQ score. A profile on a student identifies the strengths and weaknesses of his intellectual abilities. With an SOI assessment the teacher can determine how the student learns and, as a teacher, more fully understand the seemingly paradoxical student. Further, the prescription provides a plan accompanied by recommended tasks which can be used to improve the student's level of thinking and strengthen problem-solving abilities. Additionally, the SOI Institute has recently developed an SOI Screening Form for Gifted. The form consists of subtests from the SOI Learning Abilities Test on which gifted students most consistently score three years or more above grade level. More information may be obtained from the SOI Institute.

If teachers recognize that gifted students have special needs, then teachers must also recognize that these needs can only be met when the students are offered a program that is "qualitatively different" from that being offered in the regular school curriculum. SOI provides such a program. It challenges students to perceive, to brainstorm, and to make sound judgments and decisions. It encourages students to approach problems in a significantly different way, to be creative, and to enjoy the pleasure of using their minds effectively in the thinking process.

The careers our students will undertake and the problems they will encounter when they join the labor force are unknown. Teachers' goals then must be not only to give students the "survival skills" for that world, but to teach them how to use their decision-making skills to solve the problems they will face in the complex societies of the future.

PURPOSE OF THIS GUIDE

SOI was first utilized in the San Diego City Schools Gifted Program as a pilot program at Loma Portal and Lief Ericson Elementary Schools, in 1976-77. Interest in developing other SOI programs has developed as a result of these two programs and the inservice programs provided.

Many questions have arisen regarding the implementation of SOI in the classroom. This guide has been written in response to those questions in the hope that it can be used to facilitate the development of SOI programs in this district and elsewhere.

The guide's major emphasis is not on theory, but on the "how to" aspects of the program. Those who are interested in more in-depth background on the SOI Model may wish to read *The Structure of Intellect: Its Interpretations and Uses* by Mary Nacol Meeker.

The suggestions for the use of SOI presented in this guide are just that, suggestions. Each teacher faces a unique situation in the classroom and will need to determine what materials can be adapted to each classroom.

It is hoped that, as teachers read this guide, they will develop a basic understanding of SOI, become aware of methods of implementing an SOI program, and will utilize references and resources in the implementation process.

CHART 1

"C" COGNITION ACTIVITIES GRID
(Bloom's Comprehension)
(Comprehending with Meaning Beyond Perception)

GUILFORD'S OPERATION:

PRODUCTS		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	**U**	CFU-A--auditory perception CFU-V--recognizing shapes CFU-V--visual closure	CSU--word matching CSU-V--scrambled words CSU-V--crossword puzzles CSU-V--misspelled words to correct	CMU--vocabulary matching CMU--definitions CMU--word definition
Classes	**C**	CFC--picture class CFC--taste, smell, touch CFC--classification of figures	CSC--alphabetizing CSC--letter grouping CSC--letter, even-odd	CMC--classes of product words, ideas CMC--word classes CMC--word, card, lists
Relations	**R**	CFR--what goes together CFR--match shape to form CFR--figure-ground CFR--dot-to-dot	CSR--coding reading CSR--code-decipher CSR--code symbol decipher CSR--word matching CSR--word relationship	CMR--word analogies CMR--word relationships CMR--opposites CMR--word comparison
Systems	**S**	CFS-A--auditory perceptual rhythm CFS--pattern repetition CFS--repetition of verbal patterns CFS--puzzle arrangement	CSS--alphabetizing CSS-V--number/letter series CSS-V--number series	CMS--command sequence CMS--money sequence CMS--arithmetic reasoning
Transformations	**T**	CFT--figure rotat. rel. CFT--cognition of fig. rot. CFT--rotat. form board CFT--paper cutting	CST--spoonerism CST--reading backwards CST-V--spoonerism CST--buried words	CMT--synonyms CMT--rebus symbols CMT--word transfers
Implications	**I**	CFI--maze tracing CFI--planning ahead CFI--figure; pick-up-sticks	CSI--number concepts CSI--block puzzle CSI--number puzzle	CMI--reasoning CMI--implications CMI--alike and different CMI--paragraph implications

From: Meeker, M., and Sexton, K. *SOI Abilities Workbooks*, Loyola University, Los Angeles 90045.

CHART 2

"M" MEMORY ACTIVITIES GRID
(Bloom's Knowledge)
(Retrieval of Stored Information)

GUILFORD'S
OPERATION:

PRODUCTS		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	**U**	MFU--memory of objects MFU--map memory MFU--memory for figures	MSU--Morse code MSU--memory of letters/#s MSU--digit recall	MMU--memory of words MMU--memory flash cards MMU--definitions MMU--memory of pictures MMU--A&V-memory of words
Classes	**C**	MFC--memory for classes MFC--recall of classes	MSC--memory of word classification MSC--memory of numbers MSC--memory of number classes	MMC--memory of classes MMC--memory of " and words MMC--memory of classes
Relations	**R**	MFR--study and recall, pos. MFR--placement memory MFR--memory of paired fig.	MSR--memory of letter ser. MSR--memory of names MSC--memory of words/ numbers MSR--mnemonics	MMR--antonyms MMR--analogies MMR--word and symbol memory
Systems	**S**	MFS--memory of positions MFS--mem. of seq. positions MFS--memory of positions MFS-A--mem. of rhythms MFS-V--mem. or pos. (blocks page, designs)	MSS-A--digit recall MSS-A--nonsense words MSS-A--memory for musical notes	MMS--following directions MMS--calendar and weather MMS--gossip game MMS--story comprehension MMS--days of week
Transformations	**T**	MFT--memory of transform. MFT--kaleidoscope MFT--block patterns MFT--paper folding MFT--picture rotations	MST--misspelled words MST--hidden words MST--word transformation MST--number reversals	MMT--homonyms MMT--homonyms and meaning MMT--homonyms in sentences
Implications	**I**	MFI--object recall MFI--figure recall	MSI--multiplication tables MSI--arithmetic MSI--arithmetic sentences MSI--auditory arithmetic MSI--arithmetic sentences	MMI--memory for implic. MMI--con. btwn elem. inf. MMI--match job descriptions with characters in book

Fro[illegible] Meeker, M., and Sexton, K. *SOI Abilities Workbo*[illegible] Loyola University, Los Angeles 90045.

CH 3

"N" CONVERGENT PRODUCTION ACTIVITIES GRID
(Bloom's Knowledge, Synthesis, Application)
(Problem-Solving for Unique Correct Answer)

GUILFORD'S OPERATION:

PRODUCTS		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	**U**	NFU--construction-reprod. NFU--writing; copy name NFU--configuration NFU-(V.M.)--copy signs	NSU--digit to symbol	NMU--name, picture groups NMU--name, word groups NMU--contractions
Classes	**C**	NFC--clas. of shapes and lts NFC--picture classifica. NFC--cut and paste shapes NFC--clas. accord. to shape	NSC--nonsense words to class. NSC--class. nonsense words NSC--class. operation-math NSC--classify shapes	NMC--word classification NMC--classify word groups NMC--job classification
Relations	**R**	NFR--form board manipula. NFR-VK--sequence of size NFR--typing bow NFR--block construction NFR--picture sequence	NSR--symbol classification NSR--core translation NSR--symbol relationship	NMR--verbal analogies NMR--parts of speech NMR--antonyms and synonyms
Systems	**S**	NFS--design reproduction NFS--bead stringing NFS--map copying NFS--copy color wheel NFS--design reproduction	NSS--word changes NSS--alphabetizing	NMS--cartoon sequencing NMS--sequencing NMS--time sequencing NMS--scrambled sentences
Transformations	**T**	NFT--camouflaged objects NFT--camouflaged highlights	NST--camouflage (buried words) NST--magic square numbers	NMT--new uses--flw clues NMT--composite stories NMT--reconcile opposites NMT--daffynitions and malapropisms
Implications	**I**	NFI--picture completion NFI--map completion	NSI--algebra--fill in missing number	NMI--deduced implications NMI--what would you do NMI--sequence association NMI--deductions

From: Meeker, M., and Sexton, K. *SOI Abilities Workbooks*, Loyola University, Los Angeles 90045.

CHART 4

"D" DIVERGENT PRODUCTION ACTIVITIES GRID
(Bloom's Synthesis, Application)
(Creative Problem-Solving)

GUILFORD'S
OPERATION

PRODUCTS		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	**U**	DFU--elaboration-make many designs from figures	DSU--create words DSU--vocabulary development DSU--vocabulary DSU--vocabulary building	DMU--unusual uses-broad categories DMU--creative titles DMU--rapid retrieval DMU--ideas
Classes	**C**	DFC--regroup and reclass. DFC--group fig. into class. DFC--group letters into classification DFC--classification of figures open-ended	DSC--alpha classification DSC--word classification DSC--numeral classification DSC--classify words in various ways	DMC--codes, various uses DMC--word building DMC--idea classification DMC--creative word collages DMC—word classification
Relations	**R**	DFR--art faces DFR--tie dye designs DFR--create drawing DFR--create a toy	DSR--initials DSR--computation DSR--math wheels DSR--math computation	DMR--rhyme production DMR--creative poetry
Systems	**S**	DFS--art-construction DFS--block construction DFS--art designs DFS--monograms DFS--art collages	DSS--sentence construction DSS--math-base system DSS--money systems DSS--equations	DMS--sentence building DMS--scrambled sentences
Transformations	**T**	DFT--scribble drawing DFT--elaboration on shapes DFT--manip. of shapes	DST--vocabulary building change letters DST--make words from big words DST--problem-solving	DMT--riddles DMT--cartoon responses DMT--consequences DMT--proverbs DMT--new endings to old stories
Implications	**I**	DFI--elab.-creative/non DFI--dec. in diff. ways DFI--imag. drawings DFI--geo. drawings	DSI--equations-make DSI--new ones DSI--chemistry	DMI--impl. to stories DMI--planning DMI--problem-solving DMI--semantic/sym. elab. DMI--creative writing

From: Meeker, M., and Sexton, K. *SOI Abilities Workbooks*, Loyola University, Los Angeles 90045.

EVALUATION

	F	S	M
U	EFU Figural Similarities Picture Differences Figure-Ground	ESU Letter Discrimination Letter Patterns Visual Discrimination Letter, Count Symbols	EMU Match Pictures and Words Destriptions
C	EFC Picture Classification Classification, Color & Sound Taste, Similarities and Differences	ESC Phonics Match Letter & Number Classification	EMC Judging Class Names Concept Classification Classification of Animals or Plants
R	EFR Form Relations, Alike/Different Form Discrimination	ESR Equations Word Pairs Nonsense Word Pairs Rank Continuance	EMR Color Rhymes Related Words Verbal Analysis Verbal Analogies
S	EFS Construction of Picture Seqences Sequence, Color and Shades	ESS Judging Which Letter or Number Series Do Not Belong	EMS Sentence Construction Comprehension Verbal Absurdities
T	EFT Figure Rotation	EST Jumbled Words	EMT Cartoon Punch Lines Word Transformations Pantomimes
I	EFI Mazes	ESI Abbreviations Letter Consistency Map Reasoning	EMI Logical Deductions

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ASSESSMENT OF INTELLECTUAL ABILITY

The five SOI processes (cognition, memory, convergent production, divergent production, and evaluation) can be utilized without the individual student profiles. However, the use of the SOI profiles enables the teacher to identify curriculum for students on the basis of their needs. SOI profiles can be obtained by administering the SOI Learning Abilities Test or by analyzing standardized intelligence tests through the use of SOI templates. Templates for the Binet and the WISC-R are available from the SOI Institute. A profile obtained from the SOI Learning Abilities Test will be more complete and comprehensive than one obtained from a standardized IQ test. The SOI test is designed to test 90 intellectual abilities, whereas the Binet can be translated into 53 and the WISC-R into 26 (with no factors in divergent production).

The SOI Learning Abilities Test may be easily administered in the classroom to a group of students. It is not desirable to ask students to complete the test in one sitting, particularly younger children. Teachers are urged to take the test themselves before administering it to their students.

The Learning Abilities Test, along with complete instructions for administering and scoring, is available from the SOI Institute. See the "Teaching Resources" section of this guide for a list of Institute materials and services.

A sample Profile Derivation Work Sheet is presented on the following pages.

Scoring the test is simple with the exception of those areas concerned with originality in divergent production. When scoring originality teachers will be judging responses which will be unique to their classes, and they may wish to consider a tally of the responses to eliminate those that are not original.

Templates for scoring the test are not available but can be easily made by using a blank copy of the test and cutting out the boxes which correspond to the correct answers and placing it on top of the student's answers. The student's profile can be plotted by using the Profile Derivation Work Sheet. The computation must be done for each student and will take some time to complete. A profile and prescription can also be obtained by sending the test to the SOI Institute. The computer print-out, although time-saving for the teacher, involves an additional cost factor.

PREPARATION OF THE SOI PRESCRIPTION

Once a profile has been made for a student and his/her strengths and weaknesses are known, a prescription is prepared. If the computer print-out was used, the prescription is included. Teachers who plot the profile will also need to prepare the prescription. The prescription is made by pairing a strength with a weakness. The area of strength is used to assist in remediation. For example, in Chart 6 on page 15, the student is strong in Memory (8), but very weak in Transformation (2). MFT (Memory-Figural Content-Transformations), MST (Memory-Symbolic Content-Transformation), and MMT (Memory-Semantic Content-Transformation) tasks would be prescribed for this student.

PROFILE DERIVATION WORKSHEET: PART I

Use this section to determine individual strengths
and weaknesses in terms of: SPECIFIC SOI ABILITIES

Subtest Raw Scores	Adjusted Score	Percentage	Weakness-Strength Index
[(DFU–f____) + (DFU–s____) + (DFU–t*____) + ([illegible] o*____)] ÷ 7 =	____ ÷ 8	____	= DFU .... ____
[(DMU–f____) + ([illegible] o*____)] ÷ 17.5 =	____ ÷ 8	____	= DMU .... ____
(CFU ÷ 2.0) =	____ ÷ 8	____	= CFU .... ____
(CMU ÷ 3.75) =	____ ÷ 8	____	= CMU .... ____
(CFS ÷ 3.25) =	____ ÷ 8	____	= CFS..... ____
(CFT ÷ 3.25) =	____ ÷ 8	____	= CFT..... ____
(CMR ÷ 3.125) =	____ ÷ 8	____	= CMR .... ____
(CMS ÷ 2.625) =	____ ÷ 8	____	= CMS .... ____
[(DSR–f____) + (DSR–s**____) + ([illegible] **____)] ÷ 23.25 =	____ ÷ 8	____	= DSR .... ____
CSR =	____ ÷ 8	____	= CSR..... ____
(MSU ÷ 2.25) =	____ ÷ 8	____	= MSU .... ____
(MSS ÷ 2.25) =	____ ÷ 8	____	= MSS..... ____
(MSI ÷ 2.25) =	____ ÷ 8	____	= MSI..... ____
(EFU ÷ 3.25) =	____ ÷ 8	____	= EFU .... ____
(CFC ÷ 1.25) =	____ ÷ 8	____	= CFC..... ____
(EFC ÷ 2.125) =	____ ÷ 8	____	= EFC..... ____
(ESC ÷ 3.375) =	____ ÷ 8	____	= ESC..... ____
CSS =	____ ÷ 8	____	= CSS..... ____
ESS =	____ ÷ 8	____	= ESS..... ____
NSS =	____ ÷ 8	____	= NSS..... ____
[(NST–A____) + (NST–B____) + (NST–C*____) + ([illegible]–D____)] ÷ 25.125 =	____ ÷ 8	____	= NST..... ____
(NSI ÷ 2.625) =	____ ÷ 8	____	= NSI..... ____
(MFU ÷ 3.5) =	____ ÷ 8	____	= MFU .... ____
(NFU ÷ 4.125) =	____ ÷ 8	____	= NFU .... ____

*Use Weighted Values

**Use weighted values and be sure to total scores from both column A and column B for DSR–f, DSR–s, and DSR–o

– –	–	0	+	+ +
weakness		average		strength

PROFILE DERIVATION WORKSHEET: PART II

Use this section to determine individual strengths and weaknesses in terms of: GENERAL SOI ABILITIES

Subtest Adjusted Scores ▼
Summary Adjusted Score ▼
Percentage ▼
Weakness-Strength Index ▼

(CFU ___+ CMU ___+ CFS ___+ CFT ___+ CMR ___+ CMS ___+ CSR ___+ CFC ___+ CSS ___) = ___ ÷ 72 = ___ Cognition . . . . ___

(MSU ___+ MSS ___+ MSI ___+ MFU ___) = ___ ÷ 32 = ___ Memory. . . . . ___

(EFU ___+ EFC ___+ ESC ___+ ESS ___) = ___ ÷ 32 = ___ Evaluation. . . . . ___

(NSS ___+ NST ___+ NSI ___+ NFU ___) = ___ ÷ 32 = ___ Convergent . . . . ___

(DFU ___+ DMU ___+ DSR ___) = ___ ÷ 24 = ___ Divergent. . . . . ___

(DFU ___+ CFU ___+ CFS ___+ CFT ___+ EFU ___+ CFC ___+ EFC ___+ MFU ___+ NFU ___) = ___ ÷ 72 = ___ Figural. . . . . ___

(DSR ___+ CSR ___+ MSU ___+ MSS ___+ MSI ___+ ESC ___+ CSS ___+ ESS ___+ NSS ___+ NST ___+ NSI ___) = ___ ÷ 88 = ___ Symbolic. . . . . ___

(DMU ___+ CMU ___+ CMR ___+ CMS ___) = ___ ÷ 32 = ___ Semantic . . . . ___

(DFU ___+ DMU ___+ CFU ___+ CMU ___+ MSU ___+ EFU ___+ MFU ___+ NFU ___) = ___ ÷ 64 = ___ Units . . . . ___

(CFC ___+ EFC ___+ ESC ___) = ___ ÷ 24 = ___ Classes. . . . . ___

(CMR ___+ DSR ___+ CSR ___) = ___ ÷ 24 = ___ Relations. . . . . ___

(CFS ___+ CMS ___+ MSS ___+ CSS ___+ ESS ___+ NSS ___) = ___ ÷ 48 = ___ Systems. . . . . ___

(CFT ___+ NST ___) = ___ ÷ 16 = ___ Transformations . . . ___

(MSI ___+ NSI ___) = ___ ÷ 16 = ___ Implications . . . . . . ___

[illegible]

– –	–	O	+	+ +
weakness		average		strength

CHART 6

SUMMARY SCORES FOR STUDENT

```
SOI DIMENSION  ADJUSTED            %    OF       STRONG/WEAK INDEX
                SCORE            DIMENSION    ( 1=WEAKEST 9=STRONGEST)

OPERATIONS:
    COGNITION.... 43.27..OF.. 72........ 60...............  6.
    MEMORY....... 22.29..OF.. 32........ 70...............  8.
    EVALUATION... 22.90..OF.. 32........ 72...............  8.
    CONVERGENT... 17.69..OF.. 32........ 55...............  5.
    DIVERGENT....  7.38..OF.. 24........ 31...............  1.

CONTENTS:
    FIGURAL...... 40.84..OF.. 72........ 57...............  5.
    SYMBOLIC..... 55.63..OF.. 88........ 63...............  6.
    SEMANTIC..... 17.04..OF.. 32........ 53...............  5.

PRODUCTS:
    UNITS........ 33.88..OF.. 64........ 53...............  5.
    CLASSES...... 14.54..OF.. 24........ 61...............  6.
    RELATIONS.... 11.96..OF.. 24........ 50...............  4.
    SYSTEMS...... 37.63..OF.. 48........ 78...............  9.
    TRANSFRMTNS..  5.42..OF.. 16........ 34...............  2.
    IMPLICTNS.... 10.10..OF.. 16........ 63...............  6.
```

A grid with the SOI factors identified is helpful for recording the recommended prescriptive curriculum. An example of such a grid for a class is shown in Chart 7. As names are placed on the grid as a result of the prescriptions, natural groupings of students become obvious. This grid is convenient for identifying the tasks needed for students and for assigning aides, parents, or tutors to particular groups.

A similar grid can be made up for the student to be included in his/her folder. (See Chart 8.) Students who work well independently can use the grid as an aid in selecting materials and activities they need to work with, or in planning their own contracts. A blank grid is presented as Chart 9 for teacher use. The name of the operation should be noted in the upper right-hand corner and the code letter for the operation added as the first letter of the trigrams in each cell.

Once teachers have compiled information from the students' profiles, they will be concerned with curriculum materials that fit the prescriptions. Workbooks developed by Dr. Meeker for each of the five operations are available through the SOI Institute. Materials have also been developed by Creative Prescription, Unlimited at East Whittier, California. Information on these guides is available through the East Whittier School District. The remainder of this guide presents additional materials.

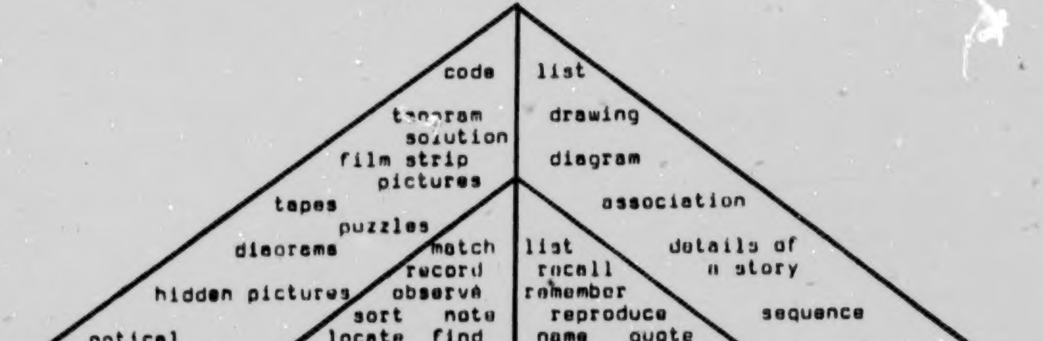
If the budget allows, teachers may wish to have the SOI Institute prepare individual workbooks for students. These workbooks are made up of the activities from the SOI Activities Workbooks which are prescribed for the student. Once teachers have developed students' prescriptions, they may create their own personalized workbooks by duplicating and pulling those materials prescribed for a student folder.

Many commercially prepared games fit very well into the SOI program. A list of materials developed through a PAR project at Austin State School is included in this section. The materials have been assigned trigrams for the factor or factors for which they are best used. In addition, a supplementary list of materials used in the pilot program at Ericson Elementary School in the SOI Lab is presented. These materials can be coded to fit into a prescriptive curriculum and, as a manipulative, offer another dimension to the SOI program.

As teachers work with the SOI curriculum they will find that, as good teachers, they have been doing many of the things prescribed. However, SOI shows how these activities fit into the different levels of thinking. SOI also develops a consciousness of a more balanced curriculum designed to give students an intellectual discipline which encourages higher levels of thinking.

CLASSROOM ACTIVITIES BASED ON THE STRUCTURE OF THE INTELLECT

To plan a unit of study, a learning center, or a daily assignment use the web below to select verbs (process) and nouns (product) when writing questions or planning activities. Each pie-shaped piece represents one of the thought processes as defined in the structure of intellect.


code
tangram solution
film strip
pictures
tapes
puzzles
dioramas
hidden pictures
optical illusions
records
list
drawing
diagram
association
details of a story
sequence
system
match
record
observe
sort note
locate find
unscramble gather
alphabetize
compile classify
recognize itemize
discover
label
list
recall
remember
reproduce
name quote
underline locate
retrieve sketch
match identify
listen
recite
say
COGNITION
MEMORY
EVALU-ATION
CONVERGENT THINKING
DI-VERGENT THINKING
debate
letter
panel
scrapbook
news item
court
trial
collage
survey
self-evaluation
recommen-dations
judge
compare
criticize
evaluate
analyze
summarize
determine
examine
select
debate
discuss
contrast
choose
de-cide
identify
decipher map
describe
diagram
demonstrate
find evidence
find correct answer
search
explain
outline
produce
convey
research paper
graph
survey
question-naire
commercial
report
diagram
chart
code
map
imagine infer
rearrange pretend
elaborate write paint
combine regroup design
create invent compose
predict estimate experiment
synthesize produce construct
song invention cartoon diorama
puppet show model play advertisement
pantomine newspaper TV, radio show new game

ORGANIZATION AND TEACHING STRATEGIES

As with any new program, the implementation of SOI will present challenges in organization and in use of teaching strategies. Ideas which have been helpful to teachers in the past are presented here so that they may be used by others.

-For easy and quick identification, color code materials to correspond with the colors of the SOI Operations Workbook.

-Check existing math and reading materials, and code them for SOI use.

-Keep manipulatives for each operation in a large box or on a separate shelf. For example, all materials (games, task cards, etc.) for Evaluation should be together in a box labeled "Evaluation." This gives mobility and helps to keep the materials for each operation separate.

-File curriculum material in folders labeled with the trigram that corresponds to the activity. These can then be pulled as needed.

-Collect materials needed to complete tasks in the SOI Abilities Workbook. A list of materials needed for each operation is presented in this section of the guide.

-Charts which identify the SOI operations and ways of defining them are helpful to the students as they become acquainted with the program.

-Separate student folders for each operation for assignments and contracts. Folders can be coded in the color used for the operation.

-At first, set aside a particular time in the schedule for SOI rather than trying to introduce its principles into other subject areas. As the teacher and students become more familiar with the concepts, SOI will eventually affect the entire instructional program.

-To begin, the teacher should introduce one operation at a time. Once he/she feels secure about it, another operation may be added. After all five operations have been introduced, students may rotate through them, using either five groups, one for each operation, or five activities with an operation.

-Use and define SOI vocabulary with the students. Teachers will be surprised how quickly students pick it up and understand the processes.

-As the teacher becomes familiar with the program, he/she should show that SOI is not an isolated part of the curriculum. Physical education, music, and art may present figural transformations or implications, or elements of memory or evaluation.

-Talk to students about how they solved a problem or how to train the memory. Students will begin to think about how they use their minds.

CHART 7

coNvergent (N)

PRODUCTS		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	U	NFU Jane Sandy	NSU	NMU
Classes	C	NFC	NSC Eric	NMC Mike Jeff Shane
Relations	R	NFR Jane	NSR Eric Christina	NMR
Systems	S	NFS Lincoln	NSS Christina Greg	NMS Mike Jane
Transformation	T	NFT	NST Mike Jane Eric Jeff Todd Mark Shane Lincoln Gina Christy Greg Eric	NMT Mike Jane
Implications	I	NFI Eric	NSI Todd Christina Shane Christy Eric	NMI Mike Jeff

(Teacher's Copy)

convergent CHAR 8 Eric

		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	**U**	NFU	NSU	NMU
Classes	**C**	NFC	[✓ NSC]	NMC
Relations	**R**	NFR	[✓ NSR]	NMR
Systems	**S**	NFS	NSS	NMS
Transformation	**T**	NFT	[✓ NST]	NMT
Implications	**I**	[✓ NFI]	[✓ NSI]	NMI

(Student's Copy)

CHART 9

Operation ______________

		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Ideas and Words
Units	**U**	FU	SU	MU
Classes	**C**	FC	SC	MC
Relations	**R**	FR	SR	MR
Systems	**S**	FS	SS	MS
Transformation	**T**	FT	ST	MT
Implications	**I**	FI	SI	MI

SOI TASKS TO BE USED IN REMEDIAL READING*

Cognition

Task	Cell
Alphabetizing	CSC CSS
Auditory Perception	CFS-A CFU-A
Bead Stringing	CFS
Buried Words	CST
Classification of Figures	CFC
Command Sequences	CMS
Competitive Planning	CFI
Crossword Puzzle	CSI
Definitions	CSU DMT CMU
Figure Rotation	CFT
Letter Grouping	CSC
Letter Recognition	CFU-V
Maze Tracing	CFI
Misspelled Words	CST
Opposites	CMR
Paper Cutting	CFI
Perception-Kinesthetic	CFU-K
Visual Closure	CFU-V
Perceptual Speed	CSU-V
Pick Up Stix	CFI
Picture Classification	CFC CMC
Matching	CFR
Opposites	CMR
Rotation	CFT
Reading Implications	CMI
Reasoning	CMI
Rebus	CMT
Rotation-Form Board	CFT
Scrambled Words	CSU-V
Sensory Perception	CMC
Spoonerisms	CST
Story Comprehension	CMT
Synonyms	CMT
Tracing-Kinesthetic	CFR
Visual Closure	CFU-V
Vocabulary	CMU
Word Analogies	CMR
Classification	CMC
Comparison	CMR
Configuration	CFR
Matching	CSR CSU-V
Word Relations	CSR
Square	CSI
Transformations	CMT

Evaluation

Task	Cell
Abbreviations	ESI
Best Name Class	EMC
Cartoon Punch Lines	EMT
Comprehension	EMS
Concept Classification	CMC
Descriptions	EMU
Figural Similarities	EFU
Form Discrimination	EFR
Jumbled Words	EST
Letter Consistency	ESI
Patterns	ESU
Logical Deductions	EMI
Picture Absurdities	EMS
Classification	EFC
Evaluation	EFU-V
Matching	EFU
Similarities	EFC
Puzzle	EFI
Reading Comprehension	EMR EMT
Related Words	EMR
Rhymes	EMR
Sequences of Figures	EFR
Letter	ESS
Series: Letter/Number	ESS
Verbal Absurdities	EMS EMU
Analogies	EMR
Visual Discrimination	ESU EFU
Vocabulary	EFU-V EMU
Word Classification	EMC ESC
Pairs	ESR
Picture-Matching	EMU

*Tasks are kept separate for each SOI workbook.

Memory

Task	Cell
Analogies	MMR
Antonyms	MMR
Buried Words	MST
Definitions	MMU
Descriptions	MMI
Digit Span	MSS-A
Following Directions	MMS
Gossip	MMS
Homonyms	MMT
Implications	MMI
Kaleidoscope	MFT
Memory of Classes	MMC
Figures	MFU-V
Names	MSR
Objects	MFU
Paired Figures	MFR
Pictures	MMU
Position	MFS
Words	MMR
	MMU
Word Classification	MSC
Misspelled Words	MST
Mnemonics	MSR
Object Recall	MFI
Placement Memory	MFR
Story Comprehension	MMS
Word Bingo	MSU

Convergent Production

Task	Cell
Alphabetizing	NSS
Antonyms and Synonyms	NMR
Bead Stringing	NFS
Block Construction	NFR
Camouflaged Figures	NFT
Letters	NST
Numbers	NST
Cartoon Strip Sequences	NMS
Classification of Shapes	NFC
Codes: Sentence Construction	NSS
Translation	NSR
Configurations	NFU
Contractions	NMU
Copying Signs	NFU
Deductions/Implications	NMI
Digit Symbol	NSU
Form Board Manipulation	NFR
Job Classification	NMC
Naming Picture Groups	NMU
Word Groups	NMU
Parts of Speech	NMR
Picture Classification	NFC
Completion	NFI
Sequences	NFR
Reading Implications	NMI
Reconciliation/Opposites	NMT
Scrambled Sentences	NMS
Sequences-Associations	NFR
	NMI
	NMS
Tying Bows	NFR
Unusual Uses	NMT
Verbal Analogies	NMR
Visual Discrimination	NFU
World Classifications	NMC
Groupings	NMR
Writing	NFU

Divergent Production

Task	Cell
Building Ideas	DMU
Classification	DMC
of Figures	DFC
of Shapes	DFC
Composition	DMT
Consequences	DMT
Creative Titles	DMU
Elaboration	DFT
Idea Classification	DMC
Implications	DMI
Initials	DSR
Proverbs	DMI
Reading Comprehension	DMU
Rhyme Production	DMR
Sentence Building	DMS
Sequences	DMS
Similes	DMS
Unusual Uses	DMU
Vocabulary Building	DST
	DSU
Development	DSU
Word Building	DMC
Classification	DSC
Production	DMU

RESOURCES

The materials in this section are included for teacher reference and to provide assistance in planning and developing an SOI program. This section includes the following headings:

Teacher Reference. Materials helpful to the teacher for personal reference; materials which can be used in the classroom program.

SOI Classification of Educational Materials. Commercially prepared materials coded to correspond with the SOI factors.

Ericson Elementary School Lab Materials. Materials used in San Diego City Schools Gifted Program SOI pilot at Ericson Elementary School.

Materials List for *SOI Abilities Workbook*. A list of items needed in order for students to complete the *SOI Abilities Workbook* activities.

Guide to Curriculum Activities Based on the SOI Factors. A grid on each of the five operations identifies the type of curriculum which corresponds to each factor. This grid is useful in identifying materials for the SOI factors and developing activities.

SOI Institute List of Materials and Services

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SOI Classification of Educational Materials
(PAR Project, Austin State School, Austin, Texas)

Company	Materials	Code
Instructo	Language Concepts in Song	MMU
	Sifo Puzzles	CFR
	Color Pattern Board	CFR, CFS, NFS, CFU, MFU, MFS
	Discovering Opposites	NFC, EFC, CFC
	Groovy Numerals	NSU
	Sort-a-Card	CFC, MFC, MFR, NFC
	Functional Sign Match Up	CMR
	Useful Signs to See and Read	CMU
	Giant Alphabet Box	CSU
	Beginning Numbers Posters	CSU
	Fit-a-Group	CFR
	Season Flannel Visual Aids	CFR, NFR
	Magnetic Primary Counting Shapes	CFR
	Flannel Board Story Kits	MMS
	Animal Learning Shapes	CFR
	Peg Board Sets	MFU
	Modern Math Kindergarten Kit	CSU (numbers), CFR (shapes)
	Community Workers	CFU
	Matchups Animals and Where They Live	NFR, CFR
	Balanced Meals	CFU, CMS
	Color Charts	CFU, CMU, CMR
	Study of Plant Growth	CNU, CNS
	Magnetic Counting Discs and Thirty Frame	NFS
	Cars and Trucks	CFU, CFC
	The Farm	CFU
	Instructo Stepping Stones	CFR, CSR
	The Black Family	CFU, CFR
	Community Helpers at Work	CFR
	Useful Signs	CMI
	Vegetables and Fruits	CFU
	Opposite Concepts	CFR, CFU
	Color Recognition	CFU
	Numerals, Words, Symbols	CSU, CMU, CFU
	Dominoes	CFR, NFR
	Seeds and Their Travels	CFU, CFS
	Safety on Streets and Sidewalk	CMI, CMR
	Nutrition	CMC, CMI, CFC
	Walk-on-Number Line	CFR, CSR
	Concept Builders (Animals)	CMU, NFC
	Concept Builders (Shapes)	CFU, CFC
	The Community	CMS
	Arithmetic Readiness Vocabulary	CFU, CMU, CFR
	Magnetic Seasons	CMS, EMS
	We Learn to Count	CSS
	Magnetic U.S. Coins	CSS
	Know and Show Alphabet	CSU, NMU

Company	Materials	Code
Instructo	Understanding Our Feelings	DMR, DMI
	Understanding Our Feelings	CMR
	Magnetic Numerals	CSU, MSS, MMS
	Number Names & Symbols	MSU
	Magnetic Fractional Circles	CFR, CFS
	Set Dominoes	CFR
	Concept Builders (Food)	CFC, EFC, NFC
	We Dress for the Weather	EFR, EMR, EMI, CMI
Trend Enterprises	Color and Shape Bingo	CFC
	Number Chart Fun	CFR, CMR, CSR
	Punch-a-Shape	NFU, NSU
	Thinking Skills Cards	CFR
	Number 1-10 Cards	CFR, CMR
	Miss and Match Puzzles: What's Missing	CFU, CFR, EFR
	Before and After	CMI, CFR, CMR
	Number Sequence	CSU, CSS, NSU
	Colors and Shapes	CFR
	1-5 Tactile Placements	SCR, CFR, EFR
American Abacus	Number Aid	CSS
Handicraft	Weaving Loom	NFS
Developmental Learning	Body Puzzle	CFR, NFR
	The Many Faces of Children	CMU, CMR
	Storytelling Posters	CSS
	Lacing	NFU
	Auditory Perception	CMC, NMR
	Auditory Training: Familiar Sounds Tape	CFU
	Body Concept Spirit Master	CFR
	Seasonal Stencils	NFU, CFU
	Animal Stencils	NFU, CFU
	Farm and Transportation	NFU, CFU
	Shapes	NFU, CFU
	Lacing Cards	NFU, CFU
	Colored Blocks in Squares	CFU, CFR, MFU, MFR
	Colored Stringing Shapes	CFU, CFR, MFU, MFR
	Design Cards, Colored Cubes	NFR, MFS, NFS, MFR
	Assorted Puzzles	NFR, CFR
	Functional Signs	CMU, CMI
	Colored Cubes/Cards	NFR, MFR
	Same/Different Cards	EFR
	Parquetry	NFR, MFU
	Functional Signs Match Up	CMR
	Association Picture Cards	CFC, NFC, CFR, NFR
	Today's Date Box	CSS, CMS, NSS
	Auditory Perception, Training Memory	MMU

Company	Materials	Code
Western Publishing Co.	Animal Lacing Cards	NFU, CFU
	Shape Lacing Cards	NFU, CFU
Ambi Toys	Dimensional Puzzle	CFR, CMU, CFU
Lauri	Fit-a-Group	CFR
	3 D Numerals	CSU, CFR
	Fit-a-Square-Fit-a-Circle	CFR
	Fit-a-Shape	CFR
Milton Bradley	Individual Clock Dials	CSS, CMS
	Daily Calendar	CMS
	Traffic Signs	CMU, CMI
	Color Stacking Discs	CFR, CMU
	Plant Growth	CFR, CFU
	The Seasons	CFU, CFR, CFC
	The Family	CFR, CFU
	Story Kits	CFU, CFR
	Musical Instruments	CFU, CFR, MFR, MFU
	Useful Signs to See & Read	
	Space Relationship Cards	EFR, CMR, EMR, CFR
	Sequence Cards	CFS, EFC, CMS, EMS
	Alphabet Pictures Words	CMU, CMR
	Fraction Discs	CSS
	Beads and Laces	CFU, CFR, MFU, MFS, NFS
	Checkers	NFS
	Assorted Puzzles	CFR
	Walk on Number Squares	CSR
	Story Cards (Tell What Is Missing)	CFU
	Arithme-Sticks	CSS, CFC
	Phonetic Quizmo	CSU, ESU
	Flash Words	CMU
	Summit-Global Strategy	CFI, CFR
	Homonym Poster Cards	EMR, CMU, CMR
	Synonym Poster Cards	EMR, CMU, CMR
	Antonym	EMR, CMU, CMR
	Hundred Chart	CSS
	Pick Pairs Game	EFU, EFR, CFU, CFR
	Map of U.S. & World Puzzle	CFR
	Tick Tock Primary Clock	CFR, NMS, CMS
	Checkers-Acey-Deucey-Backgammon	NFS
	Money Cards	CFU, CMU
	Tell Time Quizmo	EMS, CMS, CSS, ESS
	Cards, Numbers 1-10	CSS, CSU, CFU
	Multiplication & Division Quizmo	ESS, CSS, ESR, CSR
	Clock	NMS, NFR, CMS, CSS, CFR, CMR, NMR
	Dial and Spell	CFU, CMU
	Flash Cards (Addition, Subtraction, Multiplication, Division)	NSS
	Colored Dot Dominoes	CFC, CFR, NFC

Company	Materials	Code
Milton Bradley	Addition-Subtraction Quizmo	NSS, CSR, ESR
	Vegetables and Fruits Poster Cards	CFU, CFC, EFC
Ideal	Enlarged Place Value Sticks	CMR
	Baby Bolts	CFR
	Sequence Pictures	NFS
	Stencils for Tracing	NFU
	Perceptual Development Cards	NFU (Set 1) MFU (Set 2)
	Classification Charts	CFC, MFC, CFR
	How to Tie a Bow	CFS
	Colored Cubes	CFU, CFR, MFU, MFR
	Sequence Cards	CFS, CMS, EMS, EFS
	Counting Bars	CFS
	Cubical Counting Blocks	CFS
	Community Helper Crossword Puzzle	EMS, CMR, EFS
	Transportation and Communication Crossword Puzzle	EMS, CMR, CMS, NMS
	Plastic Measuring Jars	CSS, EMS, CMS
	Place Value Board	CSS, NSS
	Sundial	CFR, CSS, CMR
	Large Rulers (demonstration)	CSS
	Rhyming Puzzle	CMR, EMR, CMU, CVU
	Subtraction Flash Cards	NSS
	Flash Cards Addition	NSS
	Thermometer	CSS, ESS
	Smokey the Bear Game	CFR, CSR
	Crossword Puzzles (food)	CMR, NMR
	Holiday Crossword Puzzles	CMR, NMR
Edukaid	Number Tree	CSS, CSR
Whitman	Flash Cards (+ and -)	CSR
	Hi Ho Cherry O	CFR
	Superman Flying Bingo	NFC
	Lacing Cards	NFR
	Help Yourself Picture Nouns	EMR, CMR
	Let's Do Dots	CFR, CSR
	Beginning Arithmetic Grades 1 & 2	NSS
	Bingo for Young & Old	CSS
	Puzzles	CFR, NFR
Instructo	Classification Game	CFC, NFC
	Numerals and Counting Shapes	CFU, MFU, NFU, CSU
	My Face and Body	
	Positions in Space Posters	CFR, NFR
Play Doh	Modeling Clay, Papier-Mache	NFU
	Play Doh	NFU, DFU

Company	Materials	Code
M. I. Toys	Plastic Building Blocks	NFR, DFU
Ben-G	Ben-G Reading Puzzle	CFR, CMR
	Ben-G Number Concept Puzzle	CFR, CSR
Cook Publishing Co.	Facts About Drugs	CMI, CFU
	Social Development Teaching Pictures	CMR, EMI
Chandler	Scenic Picture Cards Primary	CFU
Mattel	Farmer Says	CFU, CFR
Sweet Education Supply	Flannel Board Visual Aids (food)	CFU, EFU, CFC, EFC
Western Publishing Co.	Bead Frame SRA	CFR, CSR, ESR, CSS, ESS
Dolch	My Puzzle Book I	CMR, CMS
	Pay the Cashier	CSS
Doubleday	Learning Numbers Is Fun	NSS
Webber Costello	Count to Ten	CSS, NSS
Grove-Tex	Money	CFU, CMU
	Money Coins (metal)	CSS
Cupid	Time Learner Clock	NMS, NFR, CMS, CFR, CMR, NMR
Watkins	Pass-O	CFR, NFR
Imperial	We Learn the Colors and their Names	CMR
Wollensak	Instructo Activity Kits	CFC, CFR, CFU, EFC
Bowmar	Body Image Kit	CFR, EFR
Continental Press	Toy Money	CFS
Child Guidance	Giant Alphabet Box	CSU, CSS, CFU
	Mechanic's Bench	CFR
Standard Publishing Co.	Holidays and Seasons	CFU

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Company	Materials	Code
Hasbro Industries Inc.	Twinkle Pop Jewels	CFU, CFR, MFU, MFR, MFS
Hayes Publishing Co.	Good Manners Posters	CMI
	Health Posters	CMI
Teacher Made	Matchups: Animals and Homes People and Jobs Colors and Shapes	CFR, EFR, CMR, EMR
	Domestic Animals and Pets	CFU
	The Family	CFU, CMU, CMR
	The Farm	CFU
	Story Kit	CMS, CFU
	Seasons	CFS, CFC
	Animal Lotto	CFR, CMR
	Number Bingo 1-10	CSR, ESR
	Shape Cards	CFU
	Numbers Cards 1-10	CSS
	Days of Week Cards	CMU
	Months of Year Cards	CMU
	Seasons Cards	CMU
	Puzzles	CFR
	Templates	NFU
	Match for Shape and Color	CFR, CSR, NSR
	Number-Shape Bingo	CSS, CFC, EFR
	What's Missing Cards	CFU
	Chart of Pottery Figures and Pottery Figures	MFU
	Body Parts--What's Missing	CFR, CFI
	Classification of Happy Faces	CFC, CMC, EFC
	Clown Face with Numbers	MSU
	Memory Chart and Cards	MFU
	Cursive Tracing Boards	NSU
	Money in the Bank	CSS, CSR, ESR
	Clock	CSS
	Word Cards (Distar)	CMU
	Clocks (Different Times)	CSS, ESS
	Months of Year	CMS
	Cards-Items with Price	ESR, CSU, CFU
	Addition (House No.)	CSR
	Cards (food with price)	ESR, CSU, CFU
	Addition-Subtraction Game	NSR, ESS
Educational Projects	Seasons Learning Manual	NMR, CMR, EMS, EFU, EMR
Playschool	Association Puzzle	CFR
	Toy Builder	NFU, DFU
	Triangle Puzzles	CFR
	Match-Up Puzzles	CFR, EFR, CMR, EMR
	Rainbow Tree	CFR, NFS

Company	Materials	Code
Playschool	Parquetry Blocks	CFR, NFR, MFR, MFU
	Color and Shape Holder	CFU, CFR
	Workbench	CFR
	Matchups	CFR, NMU
	Nested Blocks	EFR
	Abacus	CFS
	Shape Groups	NFC, CFC
Creative Playthings	Fractional Fruits	CFR, EMR
Transogram Co.	Tom & Jerry Adventures in Blunderland	CFR, CSR
Nifty-Houston	Math Bingo	CSS
Sifo	Puzzles, Low Primary	CFR
	Puzzles	CFR
	Clock	NMS, NFR, CMS, CSS, CFR, CMR, NMR
Garrard	Who Gets It?	CFR, EFR, CMR, EMR
	Picture Readiness Game	CFR, CFU, NFR
	Dolch Basic Sight Vocabulary Cards	CMU
	Dolch Popper Words	CMU
	What the Letter Says (Dolch)	CMR, CSU, EMR, ESR
Edu-Cards	Jumbo Lotto "Community Helpers"	CFR
	Lotto--The World About Us	CFR, CMR
	Zoo Lotto	CMR, CFR, EMR, CMU, EFR, EMU, EFU, CFU
	What's Missing Lotto	CFR, CFU, EMU, EFU, CMU
	ABC Lotto	CSR, CRR, CMR, CSU, CMU, CFU, ESR
	Farm Lotto	EMU, CFC, CMC, EFU, CFU, CFR, CMU
	Go-Together Lotto	CFR, EFU, EFR
	Object Lotto	CMR, CFR, CFC, EMU, EFU, CFU, CMU
	Riddle-a-Rhyme	CMR
	Simple Object Bingo (color-cued)	CFU, CFC, EFR, CFR
	The World About Us Lotto	EMU, EFU, CFR, CFU, CMU
Hallmark	Spelling Kit	CSC
Colorforms	Little Red Riding Hood Colorforms	CFR, DMS
Shackman	Shapes, Colors, and Forms	CFR

Company	Materials	Code
Toy Tinkers	Tinkertoys	DFS
Milton Bradley	Tens Counting Frame	CFS, MFS
	Human Body Parts	CFR, CMR, EFR, EMR
Allied Educational	O'Hare Starite Program	EFU, ESU, CSU
Tools for Education	Number Aid	CSS
Kenworthy Ed. Service	Phonic Rummy Set A & B	EMR, CMU, CMR
	Phonics for Reading	NMU, CMU
Gelles-Widmer	Play Way "Look" Dolch	EMR, CMR, CMU
Steck	Basic Phrase Flash Cards	CMS
Judy	Cardboard Clocks	CSS, NSS
	Clock	CFR, NSS, CSS, CSR, NFU
	Fractional Circles	NFS, NSS, CSS
	Number-Rite	CFR, CSS, CFS
McGraw-Hill	Teach Me Phonics Flash Cards	CFU, CMU
Kohner	Puzzle Blocks	NFR
Blind	Cardboard Words	CMS
Fisher-Price	Telephones	CFS
	Lacing Shoes	CFR
Child's World	Animals That Provide Food	CFU, CFR, CMR
	Animals That Help Us	CFU, CFR, CMR
Balcrum	Sum Stick	CSS, ESR, NSR, SCI, ESI
DLM & Ideal	Parquetry	NFR, MFU
Milton Bradley	Flash Cards (+ and -)	CSR
Playschool & DLM	Color Cubes/Design	NFR
Crown & Instructo	Dominoes	CFR, NFR

Company	Materials	Code
Milton Bradley & Ideal	Peg It Number Boards	CSR, NSR
Platt & Munk	Animal Picture Puzzles	CFR
Sifo, Playschool	Wooden Puzzles	CFR
Selchow & Righter Co.	Scrabble for Junior	DMU
Preschool-Elementary Ed.	Moods & Emotions Teaching Pictures	EMR, CMR
	Count and Match Kit	CFR, CSR, CSS
	Counting Blocks	MFU, CFU, MFS, NFS
	Puppet Playmates	NFU
	Phono-Viewer Programs	CMR, CSS (numbers)
	Aquarium/Fishes	CFU
	Farm Animals Picture	CFU
	Puzzles	CFR
	Language Concepts in Song	MMU
	Positions Poster	CFR
	Fabric Texture Book	CFU, CFR, CFC
	Number Sequence	CSU, CSS, NSU
	Colors and Shapes	CFR
	Number 1-10	CFR, CMR
	Giant Beaded Dominoes & Number Cards	CFR, CSR, CSU
	Picture Word Builder Puzzle	CMR, CMU
	Magnetic Counting Disc and Thirty Frame	CFR
	Learn-to-Write Manuscript Letters	NFU, MFU
	Form Puzzle	CFR
	Wooden Traffic Signs	CMU, CMI
	Wooden Puzzles	CFR
	Beads	NFS (If copying)
	Add-a-Count Scale	ESR
	Shape Board and Shapes	NFR, CFR
	Flannel Animals	CFU
	Flannel Pets	CFU
	Flannel Cars and Trucks	CFU
	Animals in a Pond	CFU
	Arithmetic Readiness	CFU, CMU, CFR
	Understanding Our Feelings	CMR
	Discovering Opposites	CFR
	Classification Game (seasons)	CFR, CFC, NFC, MFR
	Fractional Pies	NFU, NSU
	Number Cards	NFU, CFU, CSU
	Time Games	NSS, CSS
	Match Puzzle Picture with Words	CFR, CMR, CMU
	Alphabets	CSU
	Desk Calendar (for students)	CMS
	Tennis Shoe	NFS, NFR
	Count-a-Ladder	CSS, NFS
	Bead Boards	CFS
	Nuts and Bolts	EFR, NFR

Company	Materials	Code
Preschool-Elementary Ed.	Tracing Cards	NFU
	Groovy Letters	CFU, NSU, NFU
	Groovy Numerals	CFU, NSU
	Bead Patterns	NFS
	Seging Cards	NFU
	Dimensional Color Block Design	NFR, MFR
	Buzzer Board Pattern Cards	NFU, MFR
	Position in Space Posters	CMR, EMR, NMR
	Sequential Picture Cards IV	NMI, CMS, NMS, CMI
	Sequential Picture Cards II	NMI, CMS, NMS, CMI
	Association Picture Cards	CFR, CMR, NMR
	Reaction Cards	CMI
	Time Teacher	CSS, NSS
	Spatial Relation Cards	CFR
	Number Poster Cards	CMU, CSU, CMR
	Vowels Link Poster Cards	CMU, CFU
	Flannel Cutouts	CFU, MFU
	Clock Dials	CFS
	Counting Frames	CFS
	Bingo	CSC
	Visual Memory Cards	MFR
	Door Locks	CFR, NFR, CFI, EFI
	Flannel Board Aids	
	Pick Pairs (see box lid)	EMR, CFU, CFR, MFR, NFC
	Beginner's Number Poster Cards	CFU, CSU, CMU
	Cars, Trucks (wood)	DFS
	Wood Templates	CFU, NFU
	Rubber Animals	CFU
	Cloth Books	CFR
	Lacing and Zipper Boards	NFR
	Color and Shapes Matching	CFR
	Let's Play Safe	CMS, CMU
	Number Tree and Pegs	CFS
	Color, Squares, and Shapes	MFU, CFR, MFR, CFU
	Food Cards	CFU
	Matching Color & Shapes	MFU, CFR, MFR, CFU
	Abacus Board	CFS, NFS
	Large Cardboard Coins	CSS, MFU, MSU, CFU
	Small Felt Letters	CFU, CSU
	Laminated Math Cards (measurement, money, etc.)	CSS, ESS
	Number Cards 1-100	NSS
	Clock Flash Cards	CFR, CMS
	Spalding Phonograms	CSU, CMU
	Plastic Alphabet Squares	CSU
	Functional Sign Cards	CMI, CMU, EMI
	Measures (gal., qt., pt.)	CSU, CSS
	Alphabet Practice Cards (lower manuscript)	NFU, CFU, MFU
	Measuring Cups	CSS, CSU, ESU
	Checkers	CFS, NFS

Company	Materials	Code
Preschool-Elementary Ed.	Uncle Wiggly Game	CSR, CFR
	Kitchen Bingo	CFR, EFR
	Foodland	CFC, EFC, CFR
	Handmade Cutouts (kitchen utensils, foods, cleaners)	CFU

Ericson Elementary School Lab Materials

Comprehension

American Teaching Aids	Tangrams	CSI
Creative Teaching Assoc.	Attribute Dominoes	CFR
Educational Insights Inc.	Mazes and Puzzles	CFI
Educational Supplies	Tracking Skills for Reading	CFR, NFU, NMI
Ideal School Supply Co.	Visual Closure Cards	CFU
Invicta Plastics Ltd.	Bead Frame Abacus	CFS
Leasure Learning Pro.	Brainy Blocks	CFR, CSI, EFC
	Fraction (2)	CSS
Milton Bradley Co.	Ten-Tens Counting Frame	CFS
Otto Maier Verlag	Triangle Domino	CFC, NFC
Parker Brothers	Grapple	CSU, MST
Pressman Corp.	Tri-Ominos	CFR, NFR
Trend Enterprises	Wipe-Off Cards	
	Untangle the Maze	CFI, NFI
	Telling Time Level 2	CMS

Memory

Ace	Rembi--Cars	MFU
	Rembi--Flags	MFU
	Rembi--Flowers	MFU
Eichhorn	Eichhorn--Play School	MFU, MFR, MSU, MSR
Ideal	Deluxe Pegboard Patterns	MFU
	Large Pegboard Patterns	MFU

Company	Materials	Code
Invicta	Pegboard & 8 Col.	MFU
Jumbo	Electro	MFR
Leisure Learning	Mem-o-spell	MFU, MFR
Milton Bradley Springfield, MA	Memory Card Matching Game	MFU
Parker Brothers	Boggle	MST
SEE 3 Bridge Street Newton, MA 02195	Thinker Things	MFR, MFU
Sio	Sio Mosaic	MFR

Convergent Production

American Checker Federation	Tournament Checkers	NFS
Creative Teaching Press	Design Squares	NFR
Escobloc Ideal France	Attribute Blocks (48 blocks logiques)	NFU, MFR, CRF, CSR
Ideal School Supply Co.	Kaleidoscope Puzzles	NFR
	Cross	NSS, CSS
	Cross Number Puzzles (nos. 7890, 7891, 7897)	NSS
Instructo Products Co.	Instructo Activity Kit	NFC
	Discovering Opposites	EFC, CFC
Milton Bradley Co.	Checkers	NFS
Trend Enterprizes	Wipe-Off Cards (levels 1 and 2)	NFU, MFI

Divergent Production

Division of CBS Inc.	Creative Playthings Bolt-Tight	DFU, DFS
Meccano Unltd. Liverpool, England	Plastic Meccano (Set 200)	DFS
Questor	Tinkertoy	DFU, DFS
Selchow & Richter Co.	Scrabble (Sentence Cube Game)	DSI

Company	Materials	Code
SelRight	Scrabble (Crossword Game for Juniors)	DMU
	Scrabble (Sentence Game for Junior)	DMU
Ungame Co.	The Ungame	DMR, DMI

Evaluation

Garneophiles Unltd. Box 34 Berkeley Heights, NJ 07922	Flip and Flop	EFI
Invicta Plastics Ltd. Oadby, Leicester England	Delux Master Mind	EFI
Leisure Learning	Brainy Blocks	EFC, CFR, CSI
Parker Brothers	Qubic	EFI
Ravensburger	Differix	EFR
Selchow & Righter Co.	Chess for Juniors	EFI
Trend Enterprises	Wipe-Off Cards--External Differences	EFU
	Wipe-Off Cards--Associations	EFC
	Wipe-Off Cards--Same or Different	EFU

Materials List for *SOI Abilities Workbook*

The following lists of items are needed in order for student to complete the *SOI Abilities Workbook* activities. The five lists correspond to the five operations in SOI.

Cognition

1. 2 maps depicting human skeleton
2. 2 packages plastic straws
3. 1 dozen paper plates
4. 3 coffee cans
5. 1 package pinto beans
6. 1 plastic bottle with lid
7. Glitter
8. 1 ball of string
9. 5 key rings
10. 27 circles cut out of construction paper in different colors

11. 1 package graph paper
12. 1 package tagboard, 12" square
13. Tissue paper, 3 colors
14. Scraps of cloth
15. 5" x 8" index cards (plain white)
16. 1 box straight pins
17. 1 paint brush
18. Compass
19. 1 box gummed stars
20. 5 nails
21. Shoelaces (thin black nylon kind)
22. Thin wooden blocks, 4" square (1/2 dozen)
23. 4" x 8" rectangle (1/2 dozen)
24. 1/2 dozen wooden dowels, 3/8" diameter
25. Paper towels
26. Cardboard geometric shapes (all kinds, 1 dozen)
27. 1 package colored pencils
28. 1 package large eye needles
29. Compass
30. 1 package rubber bands
31. 1 dozen nails
32. 1 package paper clips
33. 1 strawberry basket
34. 1/2 dozen 8-1/2" x 11" outline maps of Africa
35. 1 ball pearl cotton crochet string

Memory

1. White butcher paper (small roll)
2. 1 box wooden colored pegs
3. 1/2 dozen wooden dowels
4. Toy items (plastic figures)
5. 1 deck of cards
6. Wooden cubes and cylinders (1/2 dozen)
7. Wood rectangle scraps
8. 3" x 5" cards (lined)
9. 36 small nails
10. 1/2 dozen plastic spoons
11. Bells
12. Magazine pictures of wild animals

Convergent Production

1. Tagboard
2. Plastic cookie holders from store
3. Coffee cans
4. Tambourine/bells
5. 4 milk cartons
6. Plastic coins
7. Paper money (bills)
8. 2 dozen wooden dowels, 3/8" diameter, 2' long
9. 6 different spices in jars
10. Sponge
11. 1 dozen paper cups

12. 1 dozen popsicle sticks
13. 1 plastic baby bottle
14. 1 glass bottle
15. 1 package 3" x 5" cards (lined)
16. 5 different state highway maps (example: California, Nevada, Utah, Idaho, Arizona, New Mexico)
17. 1 sheet clear acetate
18. 6 pieces strong tagboard, 1' x 2'
19. 1 dozen protractors
20. Jar full of dried beans
21. 1 touch bag full of items (example: plastic spoon, shell, nail, rock, ring, rubber band)
22. 1 package tagboard, 12" square
23. 1 ball of string
24. 1 nut and bolt
25. Magazine pictures of people
26. 2 pair dice
27. Strawberry carton
28. 1 can of peanut shells or plastic ones

Divergent Production

1. 1/2 dozen sheets fine sandpaper
2. 1 package styrofoam cups
3. 2 packages pinto beans
4. 1 coffee can
5. 3 kinds of wallpaper--partial rolls
6. 1 package colored wooden 1/2" spheres
7. Glitter
8. Scrap of cloth
9. Paper numbers, 1-10
10. Pliers
11. 1 dozen popsicle sticks
12. 1 box tacks
13. 1 box brads
14. 1 package tagboard, 8-1/2" x 11"
15. Rug samples, 3 kinds
16. 1 package 3" x 5" index cards (plain)
17. 1 stamp pad for re-inking
18. 1 pair shoelaces
19. 1 paper lunch sack
20. 4 separate jars (baby food jars are perfect) filled with cotton, each having been dipped in a different odorous liquid

Evaluation

1. 1 roll paper towels
2. 1 box 1/2" cubes, spheres, and cylinders (colored beads)
3. 2 skeins of knitting yarn (2 different colors)
4. 1/2 dozen paper cups (different sizes)
5. 1 package pipe cleaners
6. 1 package compressed charcoal sticks
7. 2 dozen popsicle sticks

8. 1 box flat toothpicks
9. 12 scraps of cloth (good-sized, different)
10. 1/2 dozen cardboard tubes from wrapping paper or towels
11. 1 roll of white rice paper or equivalent
12. 1 ball of string
13. 1 package of different buttons
14. Dried seed pods from San Diego trees
15. 2 small plastic film reels

SOI Institute List of Materials and Services

S.O.I. INSTITUTE
a non-profit corporation
214 MAIN STREET
EL SEGUNDO, CA. 90245
(213) 322-5995

REFERENCE MATERIALS AND INSERVICE TRAINING MATERIALS

- Beginner's Reader about the SOI Model
- Textbook by Mary Meeker -- SOI: Its Interpretation and Uses
- Manual for Training Teachers Basic SOI Theory: A Programmed Text
- Collected Papers: SI and SOI Applications and Uses
- SOI Questioning Techniques for Teachers

SOI ABILITIES WORKBOOKS AND ANALYSES

Intellectual Readiness	Creative Learning Workbook How the Alphabet Doubled: Creative Dramatics Book
Health Education and Art	Nutrition Coloring Book (one per student

General Ability Workbooks

	BASIC K-8	*ADVANCED* 7-12
Cognition	☐	☐
Memory	☐	
Evaluation	☐	☐
Convergent Production	☐	☐
Devergent Production	☐	☐

Do you want ☐ BOUND or ☐ UNBOUND Workbooks

Exercise Sheets (8½ x 11) for any Basic Workbook (per set)

SOI curriculum Workbooks	Reading Readiness (one per student)
Personalized SOI Workbooks	SOI Workbook based on student's strengths and weaknesses - - computer diagnosis and prescription based on test results from: ☐ SOI-LA ☐ BINET ☐ WISC-R Personalized computer diagnosis and prescription (no workbook)

SOI TESTS AND SCALES

Basic test K-12	SOI Learning Abilities Test (SOILA) Individual Test Booklet Examiner's Manual
Special Education and K-1	SOI Learning Abilities Test SPecial EDition Individual Test Booklet Examiner's Manual
Special Education and K-1	Reading Readiness Test Individual Test Booklet Examiner's Instructions
SOI Test Scoring Service	Scoring SOILA Basic Test Scoring SOI SPecial EDition
K-3	SOI Figural-Symbolic-Semantic Memory Test
K-12	Creativity Rating Scale (1 per student)
TMR EMR LD	Language Behavior Developmental Assessment (1 per student)
K-3	Piaget Test and Training Manual
K-12	SOI Report Card

SOI TEMPLATES

☐ BINET ☐ WISC ☐ WISC-R ☐ WAIS
☐ DTLA ☐ SLOSSON ☐ HISKEY-NEB ☐ WPPSI ☐ CTBS ☐ ITPA (free)
Level: 1 2 3

INDIVIDUAL TESTING AT SOI INSTITUTE

- Complete Testing Battery
- Testing Conference

Prices have not been included since they are subject to change. A current price list may be obtained by contacting the SOI Institute.

COGNITION

COGNITION

INTRODUCTION

Code - C   Color - pink

Cognition is the immediate discovery, awareness, rediscovery, or recognition of information in various forms, comprehension or discovery. In terms of the dynamics of learning, cognition or comprehension would seem to be the primary process since every other activity presupposes perception and awareness of stimuli with the associated ability to discriminate.

If one of our goals with the *Structure of the Intellect* is to teach children how to learn, then we need to make some learning enjoyable and free of pressure. Students need learning experiences that have as a simple goal pure comprehension. They need to be presented information for the sheer fun and practice of stimulation. This guide has been prepared with the intent of providing materials for the teacher to meet this goal.

The terms cognition and comprehension are used interchangeably in this material.

Questions that begin with "what," "where," "when," or "who" usually are at the cognitive level whereas questions that begin with "how," "why," or "in what other ways" tend to deal at the higher levels such as divergent production or evaluation.

Much of what you are now doing in your classroom deals with cognition and can be easily coded with the cognition chart on the following pages. Examples:

CSU	Crossword Puzzles	CMU	Definitions
CSU	Word Search Puzzles	CMC	Word Classifications
CSU	Scrambled Words	CMR	Opposites
CMU	Vocabulary Matching		

These areas are best developed with materials specifically chosen to meet the level and interests of your students and are readily available both commercially and in your present curriculum materials.

GLOSSARY OF SOI FACTOR DEFINITIONS IN COGNITION
(Wisc-R Analysis)

CFU - Ability to identify objects by name, visually, and auditorially
CFC - Classifies perceived objects
CFR - Ability to discover relations in perceptual material
CFS - Perceives spatial patterns and maintains orientation
CFT - Manipulates or transforms objects into another visual arrangement
CFI - Explores visually ways to select most effective action

CSC - Discovers complex relationships, patterns, or systems
CSR - Discovers relations involving letter patterns
CSS - Ability to discover complex relationships forming patterns or systems

CMU - Vocabulary
CMC - Ability to identify classes of words
CMR - Discovers relations in conceptual, abstract meanings
CMS - Ability to comprehend or structure problems in preparation for solving them
CMT - Sees several meanings to a word or expression
CMI - Anticipates needs or consequences of a given situation

COGNITION

	F	S	M
U	CFU Auditory Perception Recognizing Shapes Visual Closure	CSU Word Matching Scrambled Words Crossword Puzzle Misspelled Words to Correct	CMU Vocabulary Definitions Word Definition
C	CFC Picture Class Taste, Smell, Touch Classification of Figures	CSC Alphabetizing Letter Grouping Letter, Even-Odd Number Grouping	CMC Classification of Paired Words, Ideas Word Classification
R	CFR What Goes Together Match Shape to Form Figure-Ground Dot-to-dot	CSR Coding Code-decipher Code Symbol Decipher Word Matching Word Relationship	CMR Analogies Word Relationships Opposites Word Comparison
S	CFS Auditory Perception, Rhythm Pattern Repetition Puzzle Arrangement	CSS Alphabetizing Number/Letter Series	CMS Command Sequence Word Sequencing Word Reasoning in Math
T	CFT Cognition of Figural Rotation Rotation Form Board Paper Cutting Designs	CST Spoonerism Reading Backwards Visual Spoonerism Buried Words	CMT Synonyms Rebus Ideas Transformed
I	CFI Maze Tracing Planning Ahead Pick-up-sticks	CSI Number Concepts Number Puzzle	CMI Reasoning Implied Meanings Alike and Different Paragraph Implications

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COMMERCIALLY PREPARED MATERIALS

Many of the commercially prepared educational materials can be used to supplement the activities and materials developed for SOI operations. The following list presents materials which have been coded for the cognitive operation. In some cases, it was found that the materials could be used for several different cells in the SOI model and were coded accordingly. Additional cells (codes) are indicated in parentheses.

Company	Materials	Code
Instructo	Sifo Puzzles	CFR
	Color Pattern Board	CFR, CFS, CFU, (NFS, MFU, MFS)
	Discovering Opposites	CFC (NFC, EFC)
	Sort-a-Card	CFC, (MFC, MFR, NFC)
	Functional Sign Match Up	CMR
	Useful Signs to See and Read	CMU
	Giant Alphabet Box	CSU
	Beginning Numbers Posters	CSU
	Fit-a-Group	CFR
	Season Flannel Visual Aids	CFR, (NFR)
	Magnetic Primary Counting Shapes	CFR
	Animal Learning Shapes	CFR
	Modern Math Kindergarten Kit	CSU (numbers) CFR (shapes)
	Community Workers	CFU
	Matchups Animals and Where They Live	CFR, (NFR)
	Balanced Meals	CFU, CMS
	Color Charts	CFU, CMU, CMR
	Study of Plant Growth	CNU, CNS
	Cars and Trucks	CFU, CFC
	The Farm	CFU
	Instructo Stepping Stones	CFR, CSR
	The Black Family	CFU, CFR
	Community Helpers at Work	CFR
	Useful Signs	CMI
	Vegetables and Fruits	CFU
	Opposite Concepts	CFR, CFU
	Color Recognition	CFU
	Numerals, Words, Symbols	CSU, CMU, CFU
	Dominoes	CFR, (NFR)
	Seeds and Their Travels	CFU, CFS
	Safety on Streets & Sidewalk	CMI, CMR
	Nutrition	CMC, CMI, CFC
	Walk-on-Number Line	CFR, CSR
	Concept Builders (Animal)	CMU, (NFC)
	Concept Builders (Shapes)	CFU, CFC
	The Community	CMS
	Arithmetic Readiness Vocabulary	CFU, CMU, CFR
	Magnetic Seasons	CMS, (EMS)
	We Learn to Count	CSS
	Magnetic U. S. Coins	CSS
	Know and Show Alphabet	CSU, (NMU)

Company	Materials	Code
Instructo	Understanding Our Feeling	CMR
	Magnetic Numerals	CSU, (MSS, MMS)
	Magnetic Fractional Circles	CFR, CFS
	Set Dominoes	CFR
	Concept Builders (Food)	CFC, (EFC, NFC)
	We Dress for the Weather	CMI, (EFR, EMR, EMI)
Trend Enterprises	Color and Shape Bingo	CFC
	Number Chart Fun	CFR, CMR, CSR
	Thinking Skills Cards	CFR
	Number 1-10 Cards	CFR, CMR
	Miss and Match Puzzles: What's Missing?	CFU, CFR, (EFR)
	Before and After	CMI, CFR, CMR
	Number Sequence	CSU, CSS, (NSU)
	Colors and Shapes	CFR
	1-5 Tactile Placements	CSR, CFR, (EFR)
American Abacus	Number Aid	CSS
Developmental Learning	Body Puzzle	CFR, (NFR)
	The Many Faces of Children	CMU, CMR
	Story Telling Posters	CSS
	Auditory Perception	CMC, (NMR)
	Auditory Training: Familiar Sounds Tape	CFU
	Body Concept Spirit Master	CFR
	Seasonal Stencils	CFU, (NFU)
	Animal Stencils	CFU, (NFU)
	Farm and Transportation	CFU, (NFU)
	Shapes	CFU, (NFU)
	Lacing Cards	CFU, (NFU)
	Colored Blocks in Squares	CFU, CFR, (MFU, MFR)
	Colored Stringing Shapes	CFU, CFR, (MFU, MFR)
	Design Cards, Colored Cubes	
	Assorted Puzzles	CFR, (NFR)
	Functional Signs	CMU, CMI
	Functional Signs Match Up	CMR
	Association Picture Cards	CFR, CFC, (NFC, NFR)
	Today's Date Box	CSS, CMS, (NSS)
Western Publishing Co.	Animal Lacing Cards	CFU, (NFU)
	Shape Lacing Cards	CFU, (NFU)
Ambi Toys	Dimensional Puzzle	CFR, CMU, CFU
Lauri	Fit-a-Group	CFR
	3D Numerals	CSU, CFR
	Fit-a-Square-Fit-a-Circle	CFR
	Fit-a-Shape	CFR
Milton Bradley	Individual Clock Dials	CSS, CMS
	Daily Calendar	CMS

Company	Materials	Code
Milton Bradley	Traffic Signs	CMU, CMI
	Color Stacking Discs	CFR, CMU
	Plant Growth	CFR, CFU
	The Seasons	CFU, CFR, CFC
	The Family	CFU, CFR
	Story Kits	CFU, CFR
	Musical Instruments	CFU, CFR, (MFU, MFR)
	Useful Signs to See & Read	
	Space Relationship Cards	CFR, CMR, (EFR, EMR)
	Sequence Cards	CMS, CFS, (EFC, EMS)
	Alphabet Picture Words	CMU, CMR
	Fraction Discs	CSS
	Beads and Laces	CFU, CFR, (MFU, MFS, NFS)
	Assorted Puzzles	CFR
	Walk on Number Squares	CSR
	Story Cards (Tell What is Missing)	CFU
	Arithme-Sticks	CSS, CFC
	Phonetic Quizmo	CSU, (ESU)
	Flash Words	CMU
	Summit-Global Strategy	CFI, CFR
	Homonym Poster Cards	CMU, CMR, (EMR)
	Synonym Poster Cards	CMU, CMR, (EMR)
	Antonym	CMU, CMR, (EMR)
	Hundred Chart	CSS
	Pick Pairs Game	CFU, CFR, (EFU, EFR)
	Map of U.S. & World Puzzle	CFR
	Tick Tock Primary Clock	CMS, CFR, (NMS)
	Money Cards	CFU, CMU
	Tell Time Quizmo	CMS, CSS, (EMS, ESS)
	Cards, Numbers 1-10	CSS, CSU, CFU
	Multiplication and Division Quizmo	CSS, CSR, (ESS, ESR)
	Clock	CMS, CSS, CFR, CMR, (NMS, NFR, NMR)
	Dial and Spell	CFU, CMU
	Colored Dot Dominoes	CFC, CFR, (NFC)
	Addition-Subtraction Quizmo	CSR, (NSS, ESR)
	Vegetables and Fruits Poster Cards	CFU, CFC, (EFC)
Ideal	Enlarged Place Value Sticks	CMR
	Baby Bolts	CFR
	Classification Charts	CFR, CFC, (MFC)
	How to Tie a Bow	CFS
	Colored Cubes	CFU, CFR, (MFU, MFR)
	Sequence Cards	CFS, CMS, (EMS, EFS)
	Counting Bars	CFS
	Cubical Counting Blocks	CFS
	Community Helper Crossword Puzzle	CMR, CMS, (EMS, NMS)
	Transportation and Communication Crossword Puzzle	CMR, CMS, (EMS, NMS)
	Plastic Measuring Jars	CMS, CSS, (EMS)
	Place Value Board	CSS, (NSS)
	Sundial	CFR, CSS, CMR
	Large Rulers (Demonstration)	CSS

Company	Materials	Code
Ideal	Rhyming Puzzle	CMU, CFU, CMR, (EMR)
	Thermometer	CSS, (ESS)
	Smokey the Bear Game	CFR, CSR
	Crossword Puzzles (Food)	CMR, (NMR)
	Holiday Crossword Puzzles	CMR, (NMR)
Edukaid	Number Tree	CSS, CSR
Whitman	Flash Cards (+ & -)	CSR
	Hi Ho Cherry O	CFR
	Help Yourself Picture Nouns	CMR, (EMR)
	Let's Do Dots	CFR, CSR
	Bingo for Young & Old	CSS
	Puzzles	CFR, (NFR)
Instructo	Classification Game	CFC, (NFC)
	Numerals and Counting Shapes	CSU, CFU, (MFU, NFU)
	My Face and Body	
	Positions in Space Posters	CFR, (NFR)
Chandler	Scenic Picture Cards Primary	CFU
Mattel	Farmer Says	CFU, CFR
Sweet Education Supply	Flannel Board Visual Aids (Food)	CFC, CFU, (EFU, EFC)
Western Publishing Co.	Bead Frame SRA	CSS, CFR, CSR, (ESR, ESS)
Dolch	My Puzzle Book I	CMR, CMS
	Pay the Cashier	CSS
Webber Costello	Count to Ten	CSS, (NSS)
Grove-Tex	Money	CFU, CMU
	Money Coins (metal)	CSS
Cupid	Time Learner Clock	CMS, CFR, CMR (NMS, NFR, NMR)
Watkins	Pass-O	CFR, (NFR)
Imperial	We Learn the Colors and Their Names	CMR
Wollensak	Instructo Activity Kits	CFC, CFR, CFU, (EFC)
Bowmar	Body Image Kit	CFR, (EFR)
Continental Press	Toy Money	CFS
Child Guidance	Giant Alphabet Box	CSU, CSS, CFU
	Mechanic's Bench	CFR
Standard Publishing Co.	Holidays and Seasons	CFU

Company	Materials	Code
Hasbro Industries, Inc.	Twinkle Pop Jewels	CFU, CFR, (MFU, MFR, MFS)
Hayes Publishing Co.	Good Manners Posters	CMI
	Health Posters	CMI
Teacher Made	Matchups: Animals and Homes People and Jobs Colors and Shapes	CMR, CFR, (EFR, EMR)
	Domestic Animals and Pets	CFU
	The Family	CFU, CMU, CMR
	The Farm	CFU
	Story Kit	CMS, CFU
	Seasons	CFS, CFC
	Animal Lotto	CFR, CMR
	Number Bingo 1-10	CSR, (ESR)
	Shape Cards	CFU
	Numbers Cards 1-10	CSS
	Days of Week Cards	CMU
	Months of Year Cards	CMU
	Seasons Cards	CMU
	Puzzles	CFR
	Templates	NFU
	Match for Shape and Color	CFR, CSR, (NSR)
	Number-Shape Bingo	CSS, CFC, (EFR)
	What's Missing Cards	CFU
	Body Parts - What's Missing	CFR, CFI
	Classification of Happy Faces	CFC, CMC, (EFC)
	Money in the Bank	CSS, CSR, (ESR)
	Clock	CSS
	Word Cards (Distar)	CMU
	Clocks (Different Times)	CSS, (ESS)
	Months of Year	CMS
	Cards-Items with Price	CSU, CFU, (ESR)
	Addition (House No.)	CSR
	Cards (food with price)	CSU, CFU, (ESR)
	Addition-Subtraction Game	
Educational Projects	Seasons Learning Manual	CMR, (NMR, EMS, EFU, EMR)
Playschool	Association Puzzle	CFR
	Triangle Puzzles	CFR
	Match-Up Puzzles	CMR, CFR, (EFR, EMR)
	Rainbow Tree	CFR, (NFS)
	Parquetry Blocks	CFR, (NFR, MFR, MFU)
	Color and Shape Holder	CFU, CFR
	Workbench	CFR
	Matchups	CFR, (NMU)
	Abacus	CFS
	Shape Groups	CFC, (NFC)
Creative Playthings	Fractional Fruits	CFR, (EMR)

Company	Materials	Code
Transogram Co.	Tom & Jerry Adventures in Blunderland	CFR, CSR
Nifty-Houston	Math Bingo	CSS
Sifo	Puzzles, Low Primary	CFR
	Puzzles	CFR
	Clock	CMS, CSS, CFR, CMR, (NMS, NFR, NMR)
Garrard	Who Gets It?	CFR, CMR, (EFR, EMR)
	Picture Readiness Game	CFR, CFU, (NFR)
	Dolch Basic Sight Vocabulary Cards	CMU
	Dolch Popper Words	CMU
	What the Letter Says (Dolch)	CMR, CSU, (EMR, ESR)
Edu-Cards	Jumbo Lotto "Community Helpers"	CFR
	Lotto-The World About Us	CFR, CMR
	Zoo Lotto	CMU, CFU, CMR, CFR, (EMR, EFR, EMU, EFU)
	What's Missing Lotto	CMU, CFR, CFU, (EMU, EFU)
	ABC Lotto	CSR, CRR, CMR, CSU, CMU, CFU, (ESR)
	Farm Lotto	CFU, CFC, CMC, CFR, CMU, (EFU, EMU)
	Go-Together Lotto	CFR, (EFU, EFR)
	Object Lotto	CMR, CFR, CFC, CFU, CMU, (EMU, EFU)
	Riddle-a-Rhyme	CMR
	Simple Object Bingo (color cued)	CFR, CFU, CFC, (EFR)
	The World About Us Lotto	CFR, CFU, CMU, (EMU, EFU)
Hallmark	Spelling Kit	CSC
Colorforms	Little Red Riding Hood Colorforms	CFR, (DMS)
Shackman	Shapes, Colors and Forms	CFR
Milton Bradley	Tens Counting Frame	CFS, (MFS)
	Human Body Parts	CFR, CMR, (EFR, EMR)
Allied Educational	O'Hare Starite Program	CSU, (EFU, ESU)
Tools for Education	Number Aid	CSS
Kenworthy Ed. Service	Phonic Rummy Set A & B	CMU, CMR, (EMR)
	Phonics for Reading	CMU, (NMU)
Gelles-Widner	Play Way "Look" Dolch	CMR, CMU, (EMR)
Steck	Basic Phrase Flash Cards	CMS

Company	Materials	Code
Judy	Cardboard Clocks	CSS, (NSS)
	Clock	CFR, CSS, CSR, (NFU, NSS)
	Fractional Circles	CSS, (NFS, NSS)
	Number-Rite	CFR, CSS, CFS
McGraw-Hill	Teach Me Phonics Flash Cards	CFU, CMU
Blind	Cardboard Words	CMS
Fisher-Price	Telephones	CFS
	Lacing Shoes	CFR
Child's World	Animals that Provide Food	CFU, CFR, CMR
	Animals that Help Us	CFU, CFR, CMR
Balcrum	Sum Stick	CSS, (ESR, NSR, ESI)
Milton Bradley	Flash Cards (+ and -)	CSR
Crown & Instructo	Dominoes	CFR, (NFR)
Milton Bradley & Ideal	Peg It Number Boards	CSR, (NSR)
Platt & Munk	Animal Picture Puzzles	CFR
Sifo, Playschool	Wooden Puzzles	CFR
Preschool-Elementary Ed.	Moods & Emotions Teaching Pictures	CMR, (EMR)
	Count and Match Kit	CFR, CSR, CSS
	Counting Blocks	CFU, (MFU, MFS, NFS)
	Phono-Viewer Programs	CMR, CSS (numbers)
	Aquarium/Fishes	CFU
	Farm Animals Picture	CFU
	Puzzles	CFR
	Positions Poster	CFR
	Fabric Texture Book	CFU, CFR, CFC
	Number Sequence	CSU, CSS, (NSU)
	Colors and Shapes	CFR
	Number 1-10	CFR, CMR
	Giant Beaded Dominoes & Number Cards	CFR, CSR, CSU
	Picture World Builder Puzzle	CMR, CMU
	Magnetic Counting Disc and Thirty Frame	CFR
	Form Puzzle	CFR
	Wooden Traffic Signs	CMU, CMI
	Wooden Puzzles	CFR
	Shape Board and Shapes	CFR, (NFR)
	Flannel Animals	CFU
	Flannel Pets	CFU
	Flannel Cars and Trucks	CFU
	Animals in a Pond	CFU

Company	Materials	Code
Preschool-Elementary Ed.	Arithmetic Readiness	CFU, CMU, CFR
	Understanding Our Feelings	CMR
	Discovering Opposites	CFR
	Door Locks	CFR, CFI, (EFI, NFR)
	Flannel Board Aids	
	Pick Pairs (see box lid)	CFU, CFR, (MFR, NFC, EMR)
	Beginners Number Poster Cards	CFU, CSU, CMU
	Wood Templates	CFU, (NFU)
	Rubber Animals	CFU
	Cloth Books	CFR
	Color and Shapes Matching	CFR
	Let's Play Safe	CMS, CMU
	Number Tree and Pegs	CFS
	Color, Squares, and Shapes	CFR, CFU, (MFU, MFR)
	Food Cards	CFU
	Matching Color & Shapes	CFR, (MFR, MFU)
	Abacus Board	CFS, (NFS)
	Large Cardboard Coins	CFU, CSS, (MFU, MSU)
	Small Felt Letters	CFU, CSU
	Laminated Math Cards (Measurement, Money, Etc.)	CSS, (ESS)
	Clock Flash Cards	CFR, CMS
	Spalding Phonograms	CSU, CMU
	Plastic Alphabet Squares	CSU
	Functional Sign Cards	CMI, CMU, (EMI)
	Measures (Gal., Qt., Pt.)	CSU, CSS
	Alphabet Practice Cards (Lower Manuscript)	CFU, (MFU, NFU)
	Measuring Cups	CSS, CSU, (ESU)
	Checkers	CFS, (NFS)
	Uncle Wiggly Game	CSR, CFR
	Kitchen Bingo	CFR, (EFR)
	Foodland	CFC, CFR, (EFC)
	Handmade Cut-Outs (Kitchen Utensils, Foods, Cleaners)	CFU

Additional uncoded items are listed below:

Company	Materials
Ideal	Visual Closure Cards
Parker Brothers	BOGGLE (Hidden Word Game) GRAPPLE (Scrambled Word Game)
Leisure Learning	Fraction
Creative Teaching Assoc.	Attribute Dominoes

Company	Materials
Trend Enterprises	Untangle the Maze--Wipe-off Cards
American Teaching Aids	Tangrams

COGNITION ACTIVITIES

Activities for the cognition factor are presented on the following pages. The letters (code) in the upper right-hand corner correspond to the Cognition Activities Grid presented in the Introduction of the Cognition section.

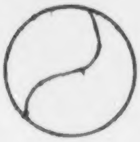
Answers to activity puzzles are presented at the end of the activities.

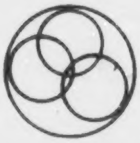
CHECK YOUR PERCEPTION

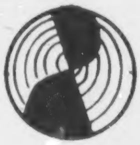
1. OBSERVATION

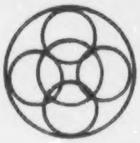
Look at the figure on the left-hand side. Now see if you can find that figure hidden in the drawings on the right.

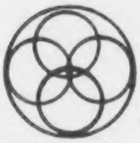
Circle the figures you think hide the original figure.











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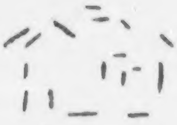
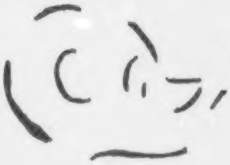
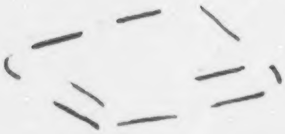
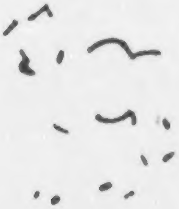
2. PICTURE THIS

Below are some objects with their details missing. Can you name what these objects are?









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3. IDENTIFY AND MATCH

Look at the figure on the left, then circle the one that matches it.

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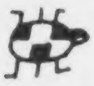
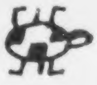
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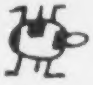
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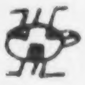
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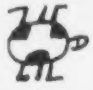
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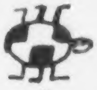
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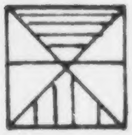
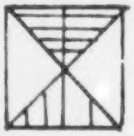
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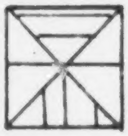
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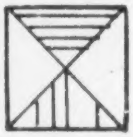
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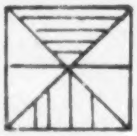
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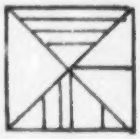
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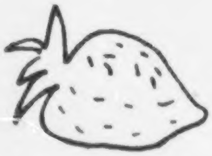
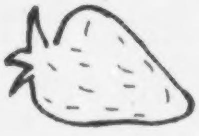
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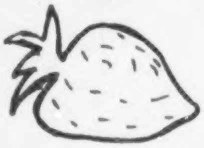
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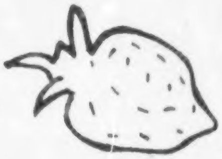
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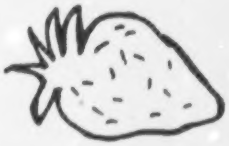
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4. CLASSIFY

Two figures in each row are exactly alike. Put a check by these figures.

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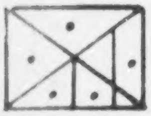
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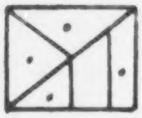
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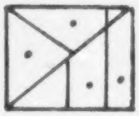
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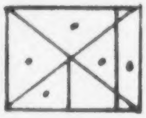
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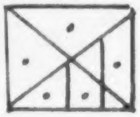
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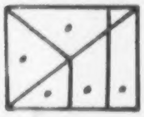
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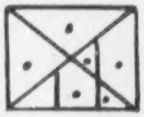

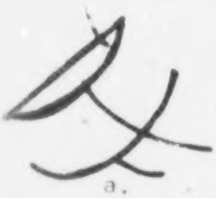
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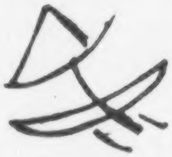
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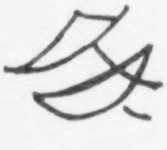
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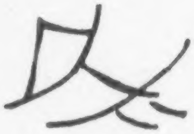
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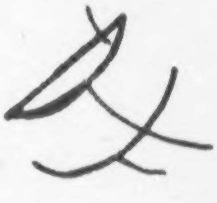
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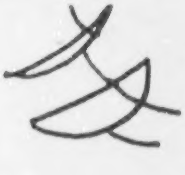
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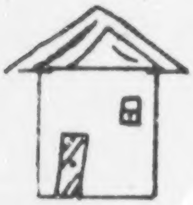
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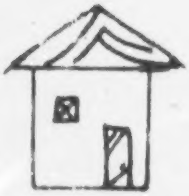
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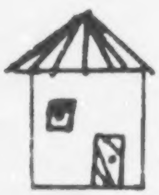
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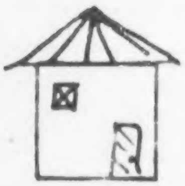
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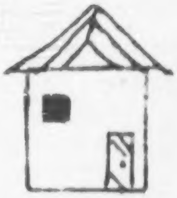
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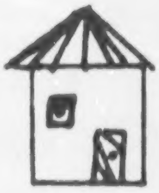
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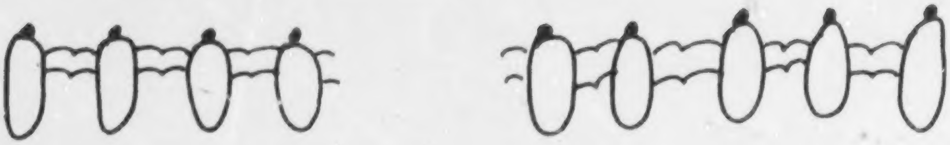
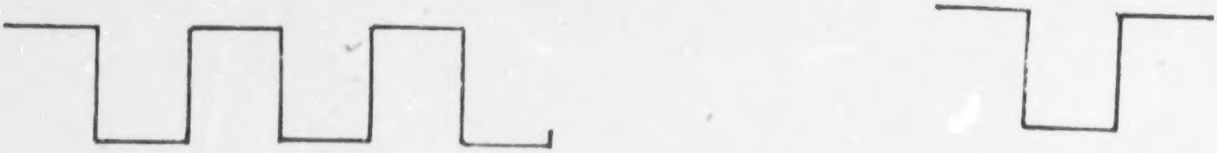
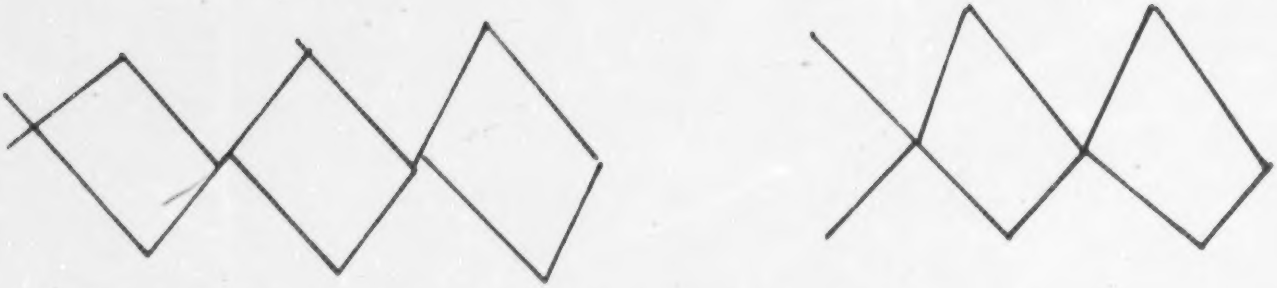
5. PATTERNS

Complete the patterns below:







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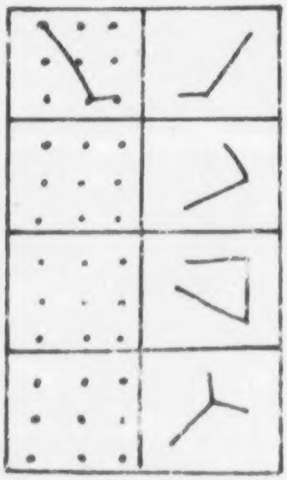
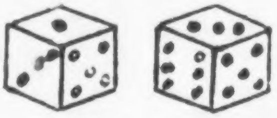
6. REVERSE

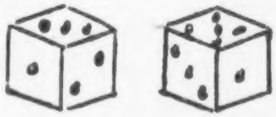
The top figure on the left is the reverse of the right drawing. Draw the reverse of each drawing.

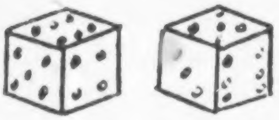


7. ROTATION

Examine each pair of dice. If you think the first die can be turned into the position of the cube opposite, put a check.







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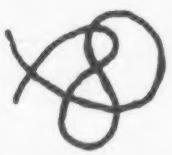
8. VISUALIZE

Circle the strings that would make a knot if the ends were pulled.



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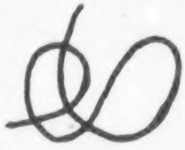

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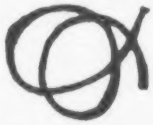

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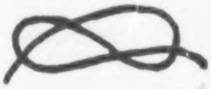

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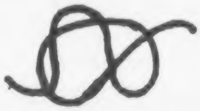

E

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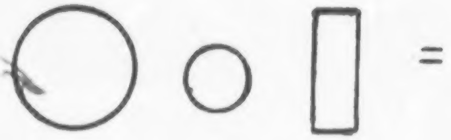
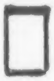
9. ANALOGY

Which figure on the right completes the relationship you see on the left?





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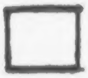

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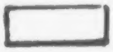

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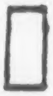

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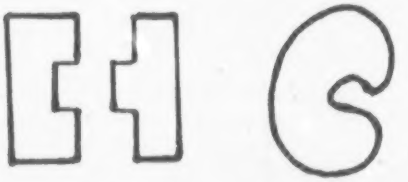

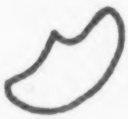

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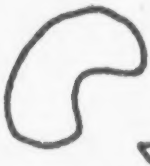

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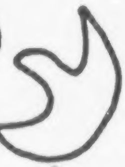

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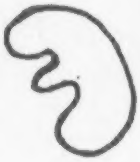
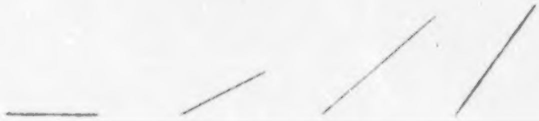
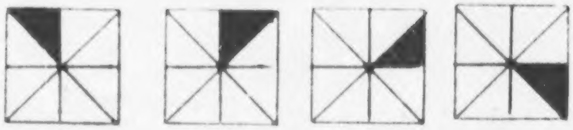


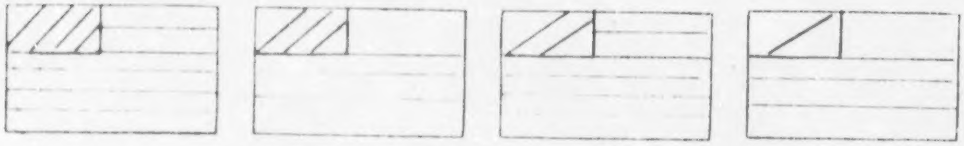
D

10. INDUCTION

Look at the series on the left, then draw what could come next.







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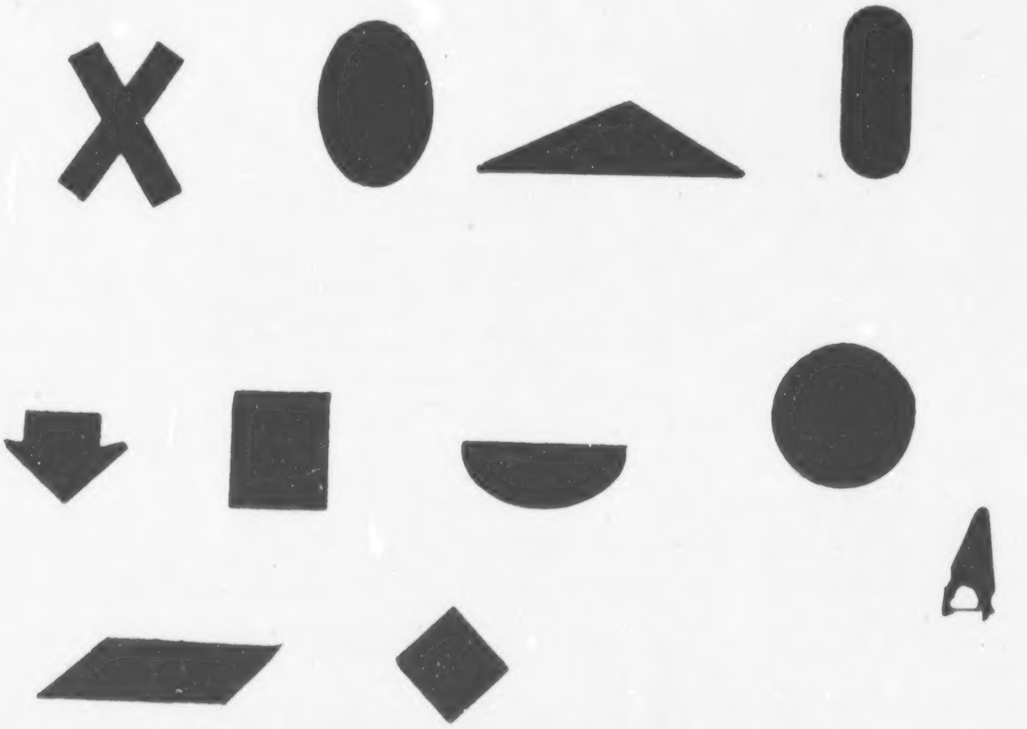
11. MEMORY

Study these shapes for two minutes. On a separate paper draw as many as you remember.

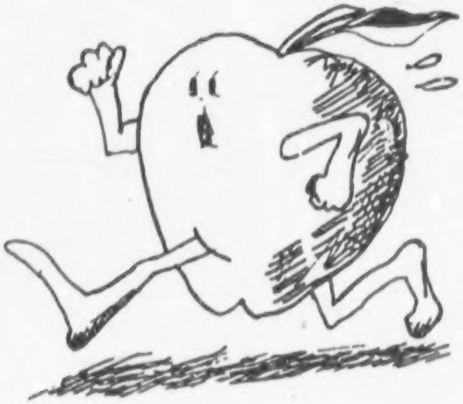


SHARPENING YOUR SENSES

An important part of brain exercising is using all of your senses. Most people don't. It's another example of not using what you have. Problem solvers need all the help they can find.

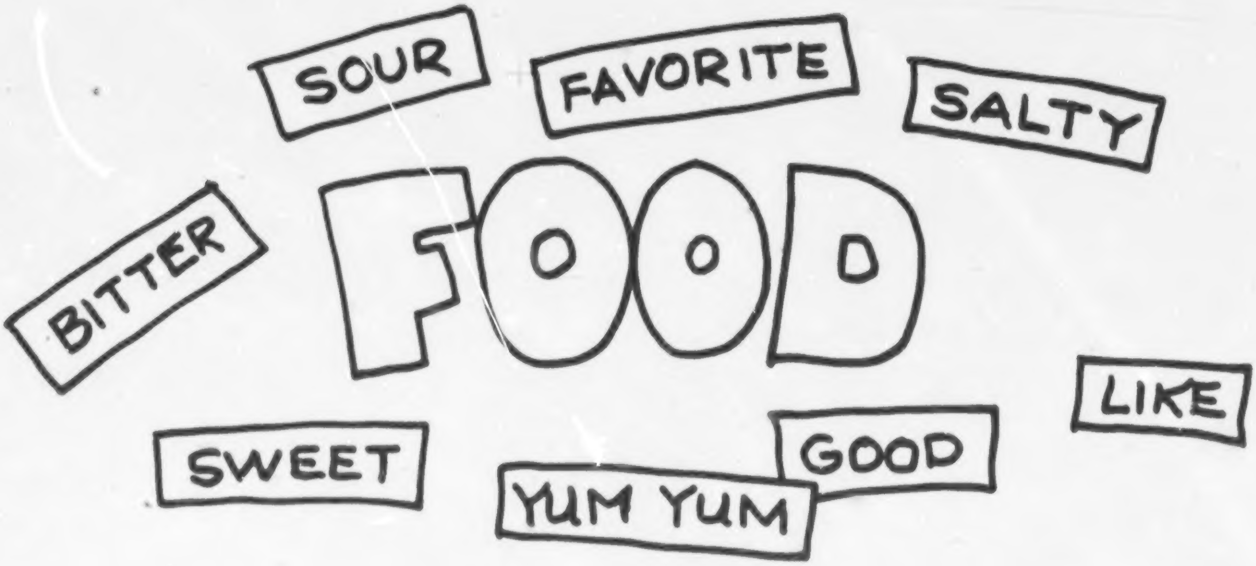
Try to imagine the things listed below. You can rate yourself on each one: easy, hard, can't do it at all.

Imagine the taste of peanuts.
Imagine the smell of gasoline.
Imagine the sound of a car starting.
Imagine the feel of swinging high on a swing.
Imagine the taste of a banana.
Imagine the smell of toothpaste.
Imagine the sound of a dropped book hitting the floor.
Imagine the feel of biting into an apple.



On with more complicated "imagine" exercises.

Imagine the taste of chocolate ice cream changing into the taste of a piece of orange.
Imagine the feel of hopping on one foot changing into the feel of skipping.
Imagine the smell of bread toasting changing into the smell of peanut butter.
Imagine the sound of a friend laughing changing into the sound of a baseball bat hitting the ball.


SOUR
FAVORITE
SALTY
BITTER
FOOD
LIKE
SWEET
GOOD
YUM YUM

You need:

Magazines
Scissors
Paste
Large sheet of paper

Find and cut out pictures of foods.

Group and paste in groups according to classifications of your choice. You might choose:

Salty
Sweet
Bitter
Sour

or

Foods I Like
My Favorite Foods

Foods I've Never Tasted

Foods I Do Not Like

DOMINOES

Materials:

41 domino cards (See following pages.)

Activity:

Three to four students may play.

Cards are placed face down on table.

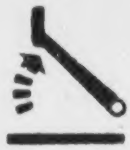
Each player draws 5 cards.

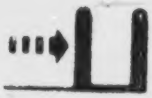
One player begins by placing one of her/his dominoes face up on the table.

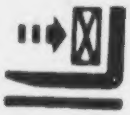
The next player on the right must match either end of that domino card, pass, or draw one from the pack.

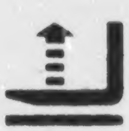
As long as the player can match an end s/he may have another turn, or draw from the pack, or pass.

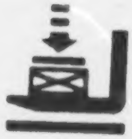
First player who gets rid of all her/his cards wins the game.

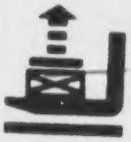


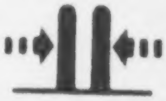


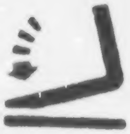


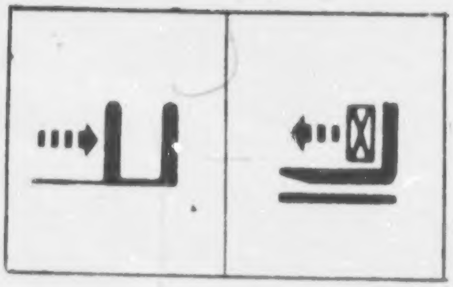


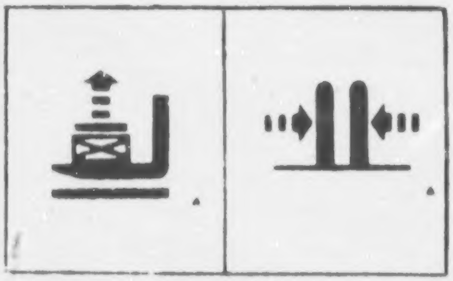


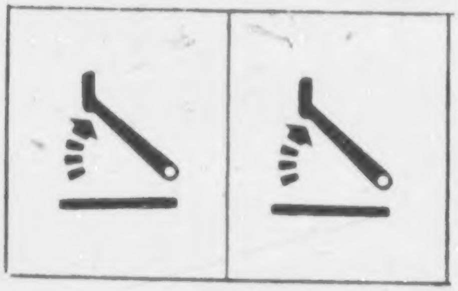


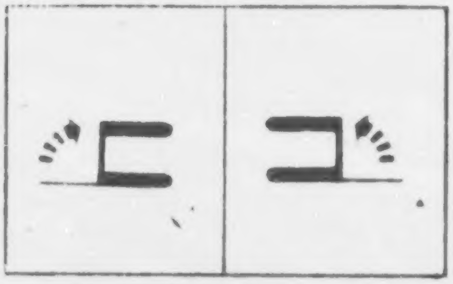


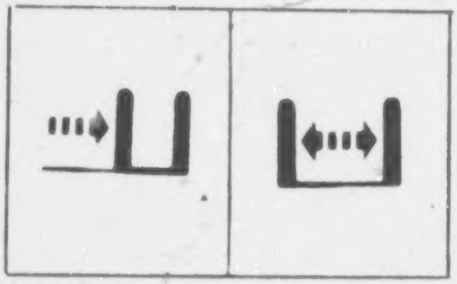


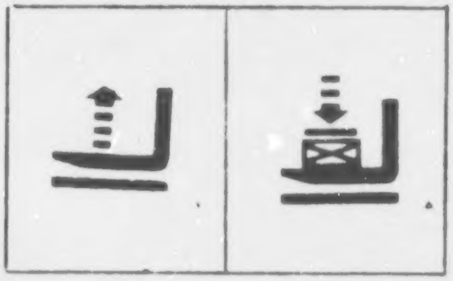


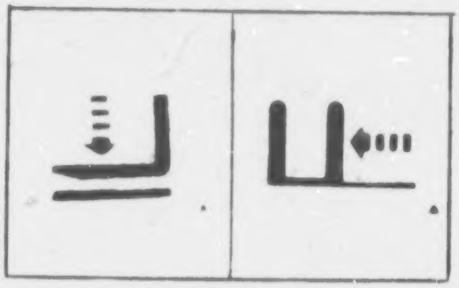


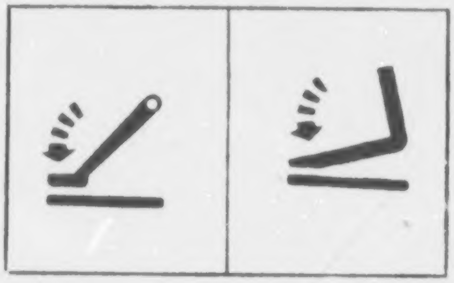


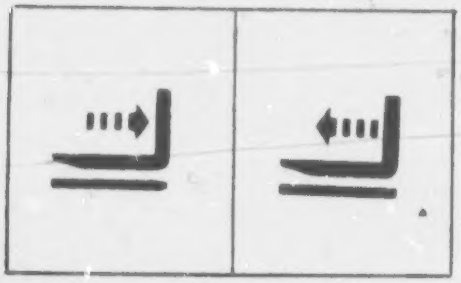


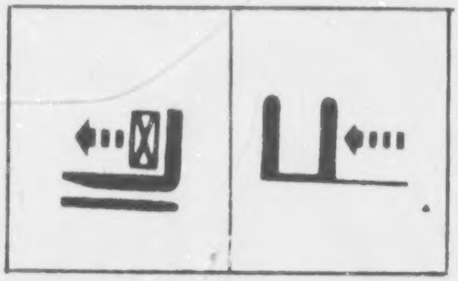


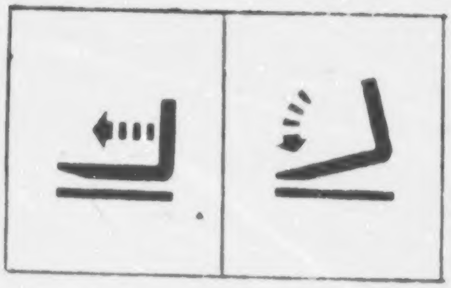


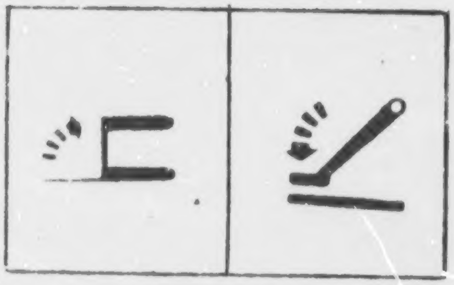


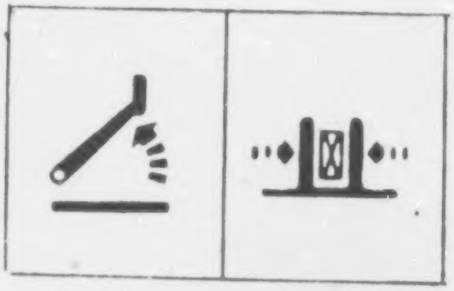


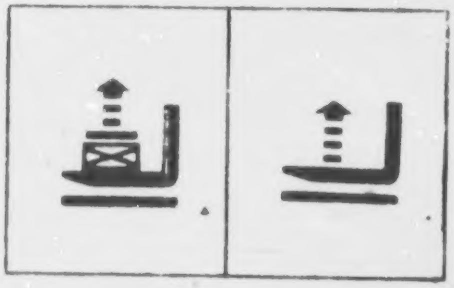


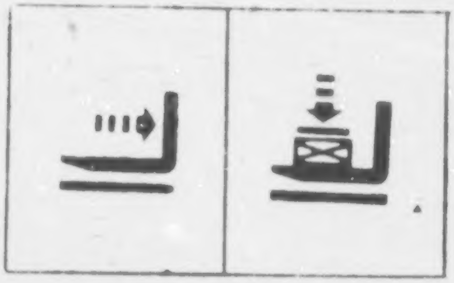


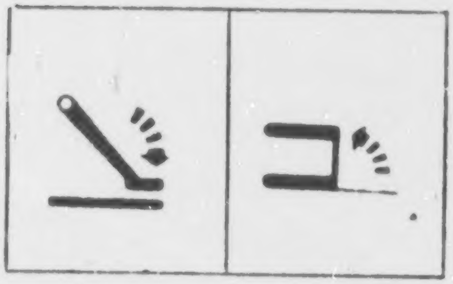


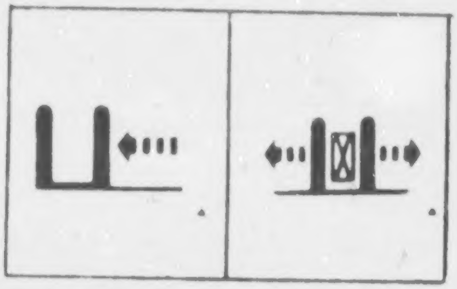


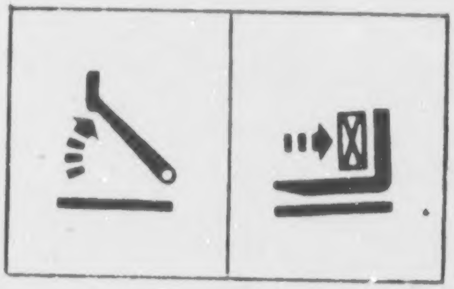


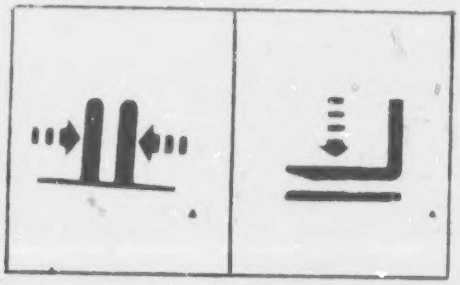


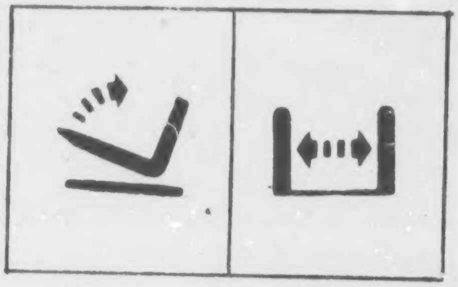


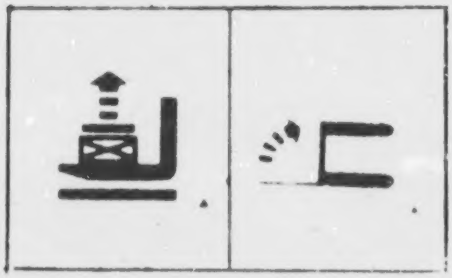


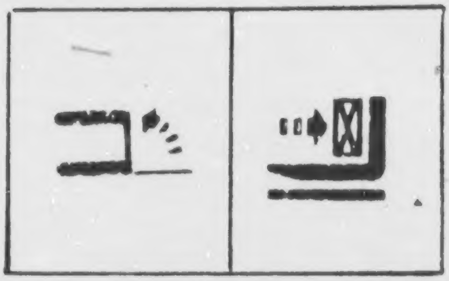


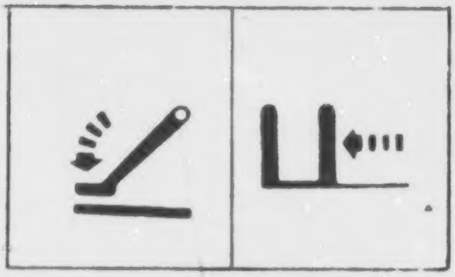


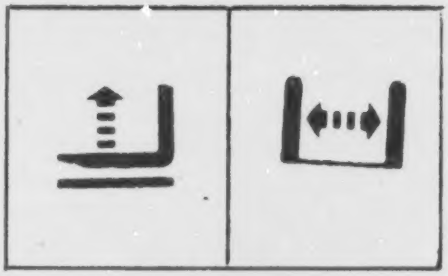


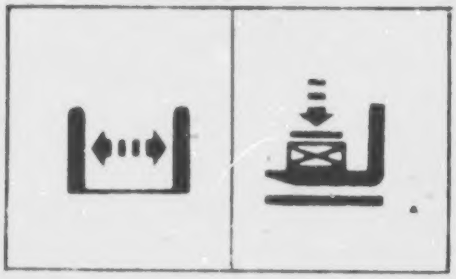


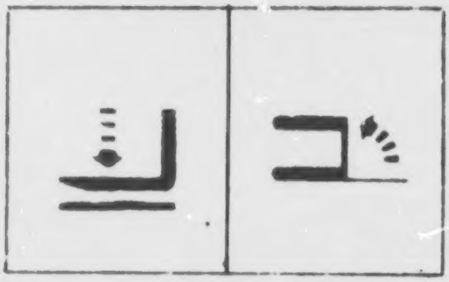


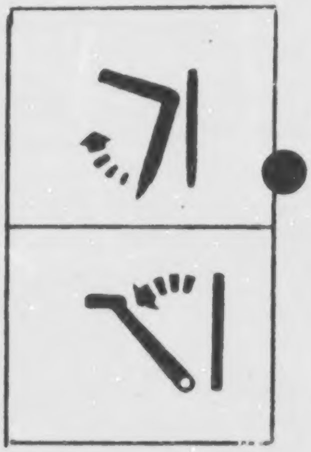


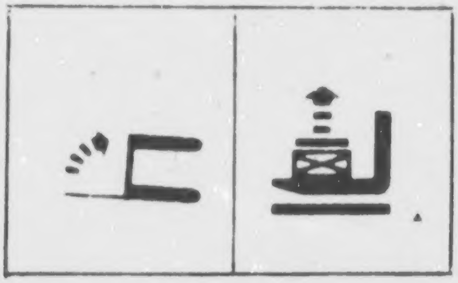


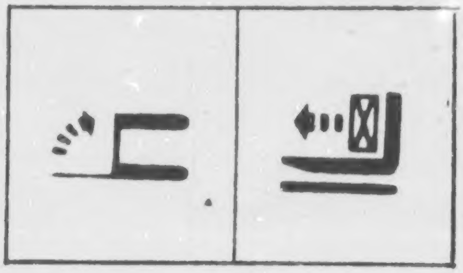












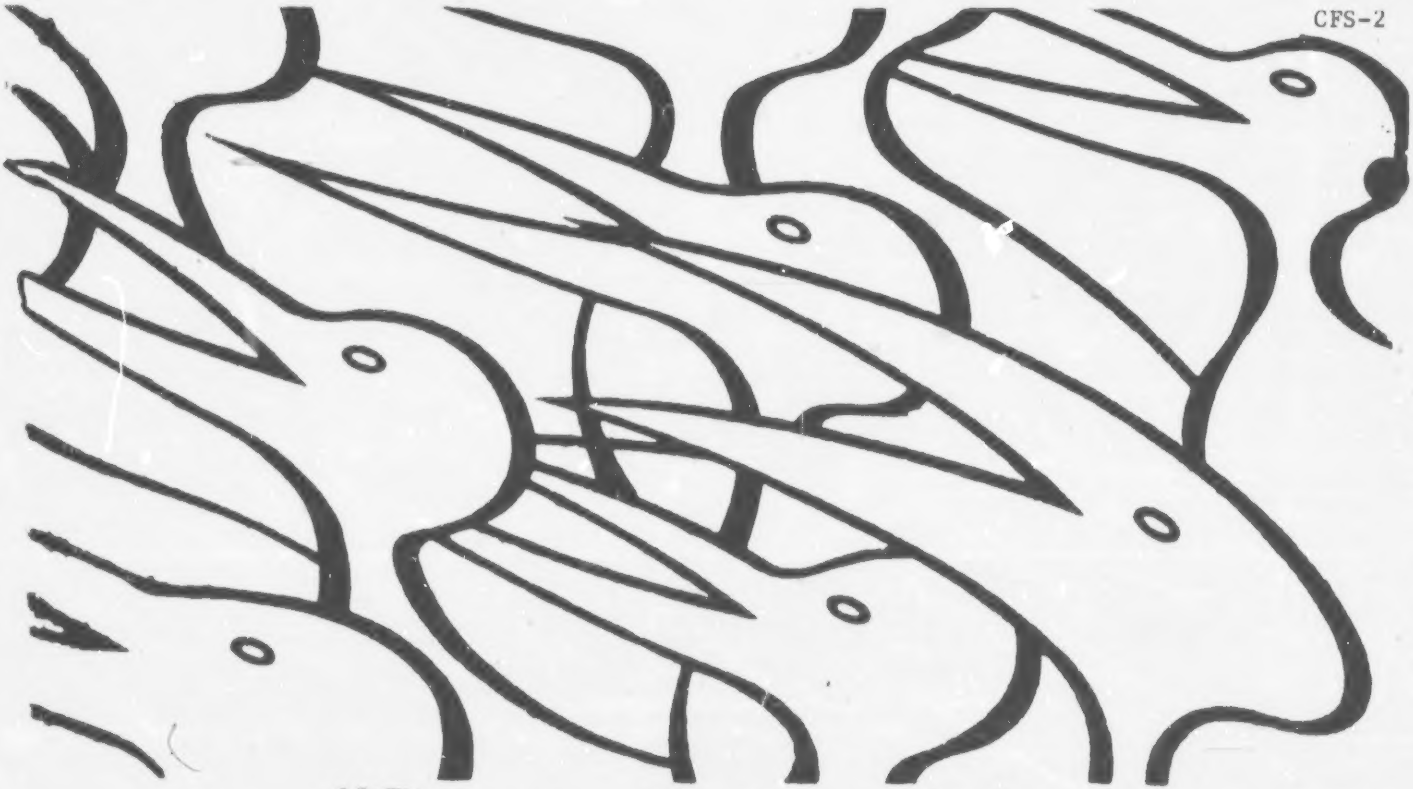
HOW TO CREATE AN ILLUSION

We all need to be aware of how we can be deceived by what we see. Artists, designers, engineers, and other people are aware of this and use this factor in their work. By becoming familiar with optical illusions, we can also learn to understand our surroundings.

Some types of optical illusions are listed below:

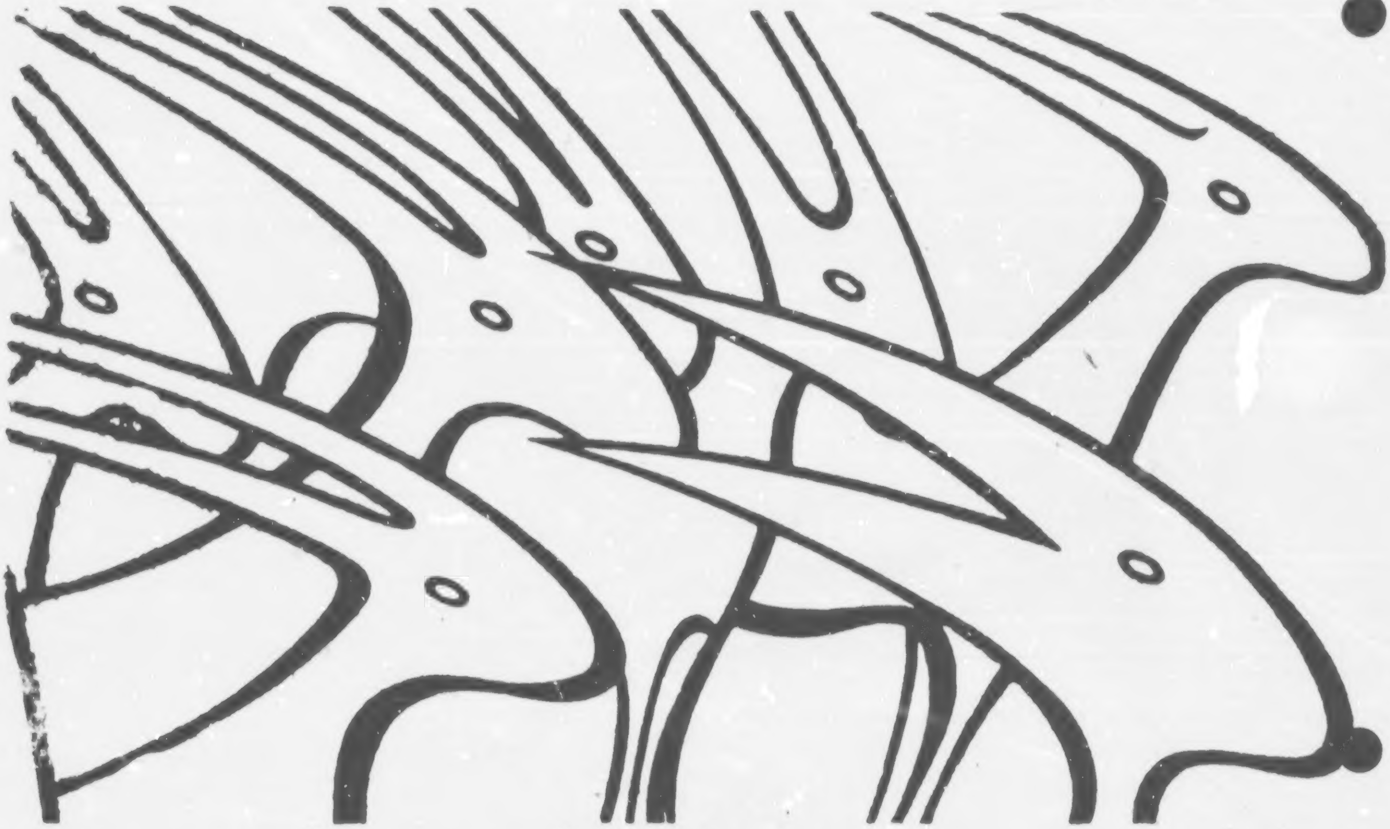
1. A vertical line usually appears to be longer than a horizontal one.
2. Figures left open appear to be larger than an equal figure completely closed.
3. Drawings of a three-dimensional figure on a flat surface seem to change.
4. Placing one figure behind the other or drawing with depth makes equal figures seem unequal.
5. Surrounding lines or figures make other lines or figures appear distorted.
6. Light-colored figures appear larger than dark-colored figures of equal size.
7. The distance between interrupted parts of a drawing seems to shrink.
8. Widgets, continuous boxes, and so on.

Try to design a sample of each type. Then, create a picture or design of optical illusions.



"Sometimes it's

Color this page to make two *different* pictures.

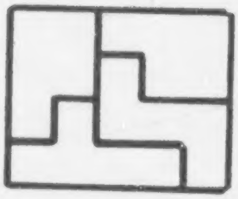


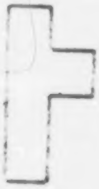
sometimes it's

MATCHING SHAPES

Which puzzle piece can be moved over the dark puzzle piece by sliding or turning it only? (The piece cannot be flipped over.)

1





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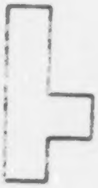

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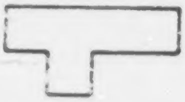

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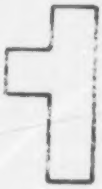

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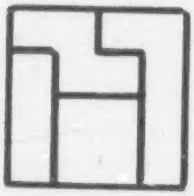

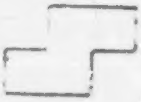

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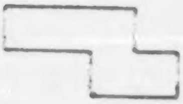

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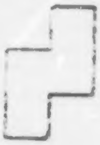

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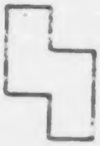

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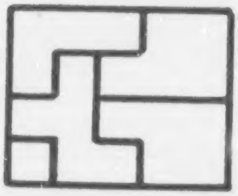

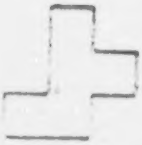

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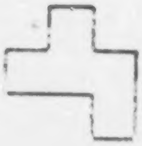

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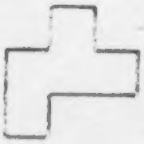

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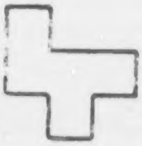

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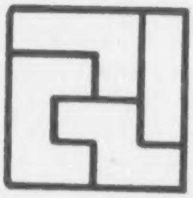

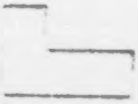

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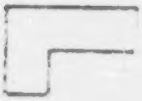

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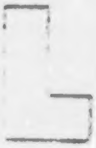

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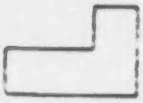

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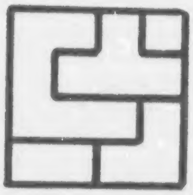

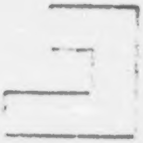

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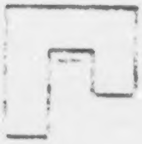

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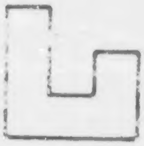

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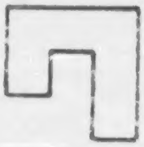
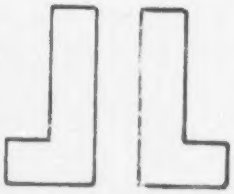


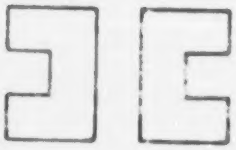
D

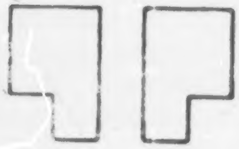
CFS-4

MIRROR IMAGES

If you flip or *reflect* a shape, this gives a *mirror image* of the shape. Three samples of shapes and their mirror images are shown below. Can you draw in the other nine?







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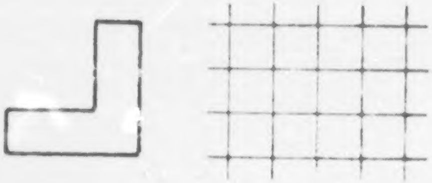

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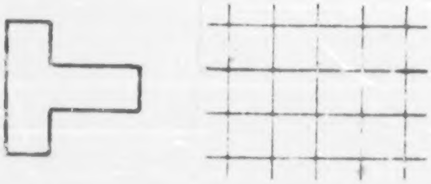

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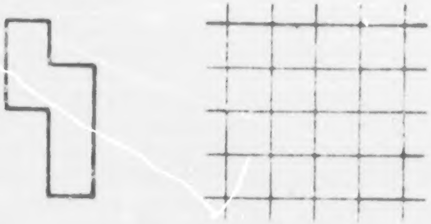

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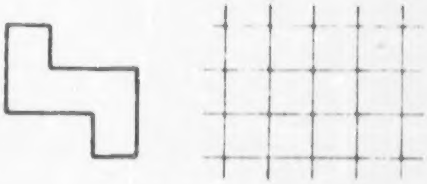

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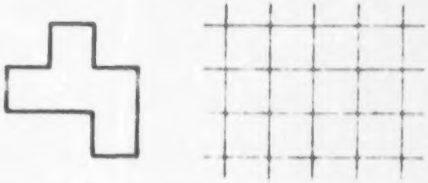

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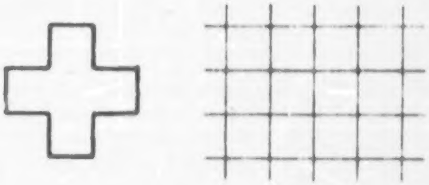

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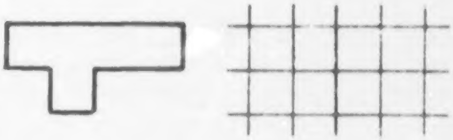

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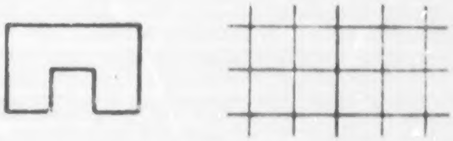

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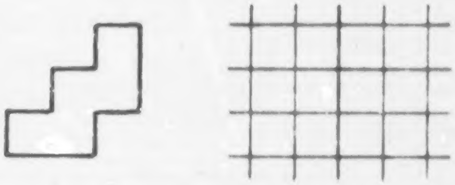
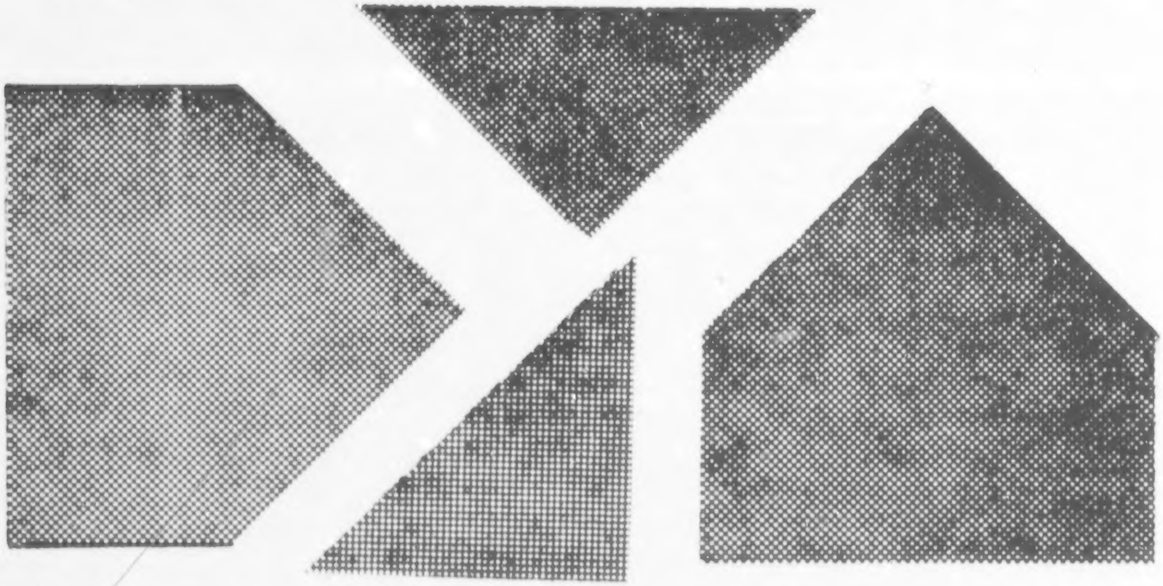
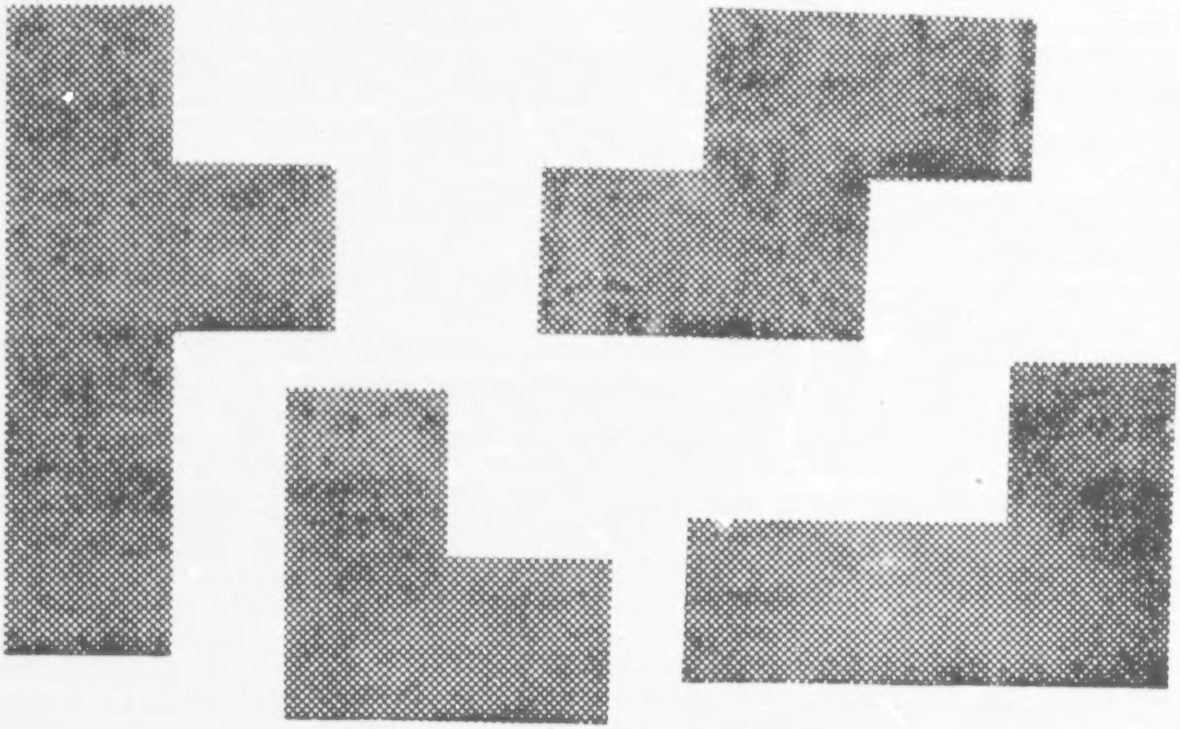


FORM SQUARES

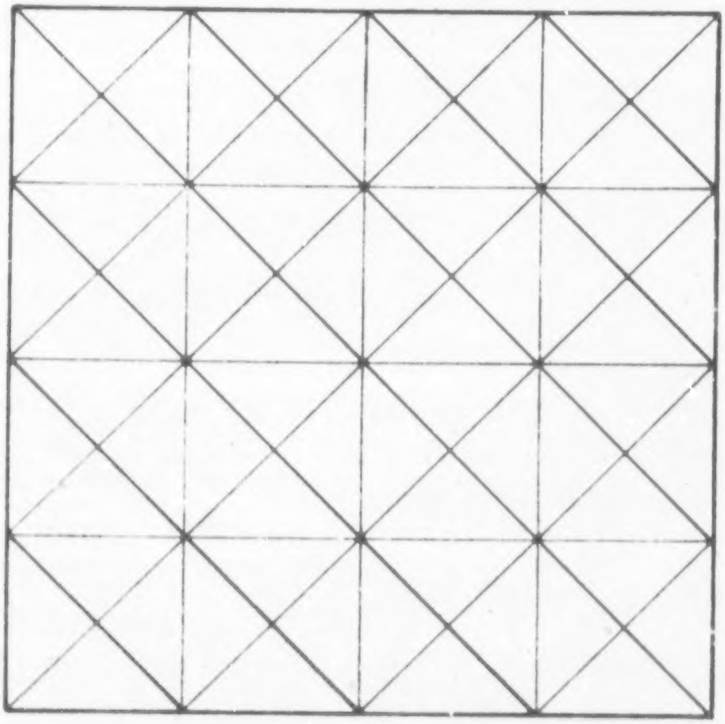
Cut out these shapes and form two squares.

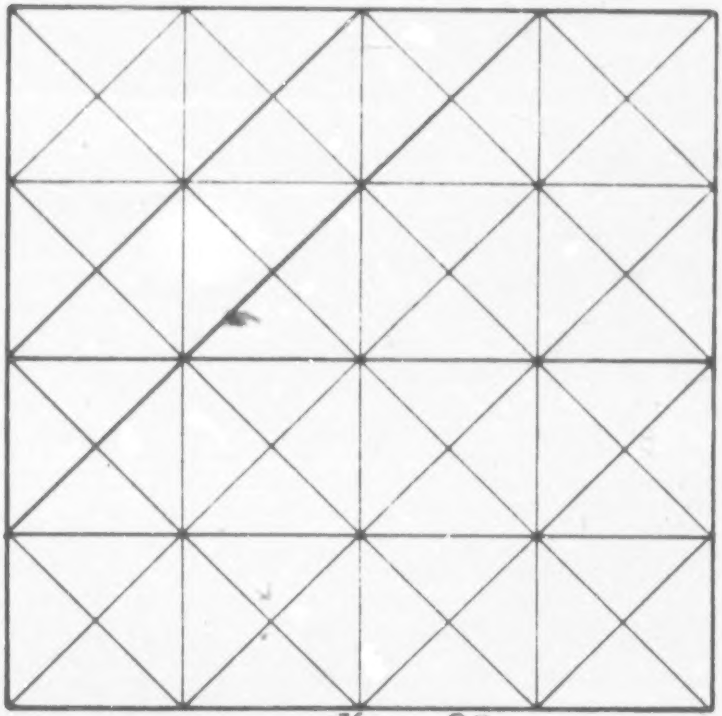




PUZZLE DESIGNS

Use these designs to make your own puzzles. Color the shapes and cut. Exchange puzzle pieces with a friend.





PUZZLE PIECES

Circle the letters beneath the two puzzle pieces that would complete the rectangle. The piece may be turned but not flipped.

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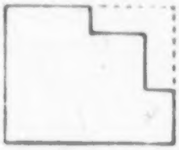
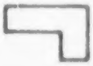
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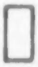
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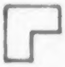
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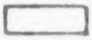
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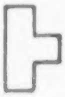
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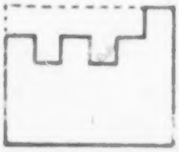
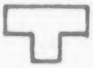
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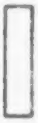
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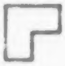
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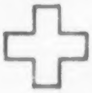
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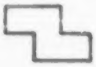
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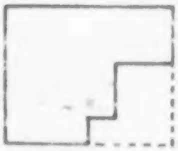
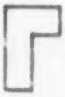
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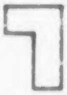
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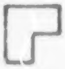
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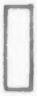
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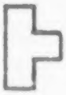
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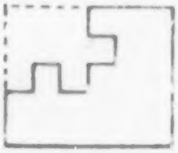
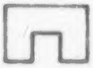
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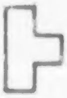
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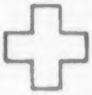
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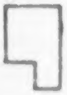
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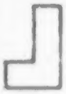
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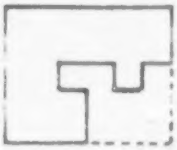
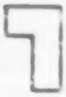
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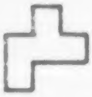
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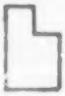
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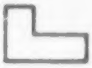
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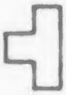
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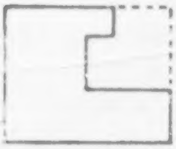
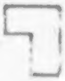
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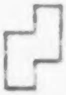
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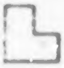
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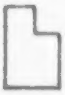
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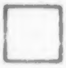
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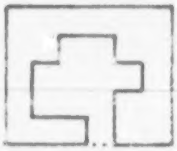
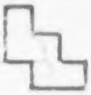
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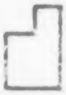
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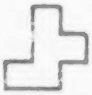
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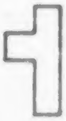
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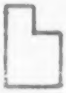
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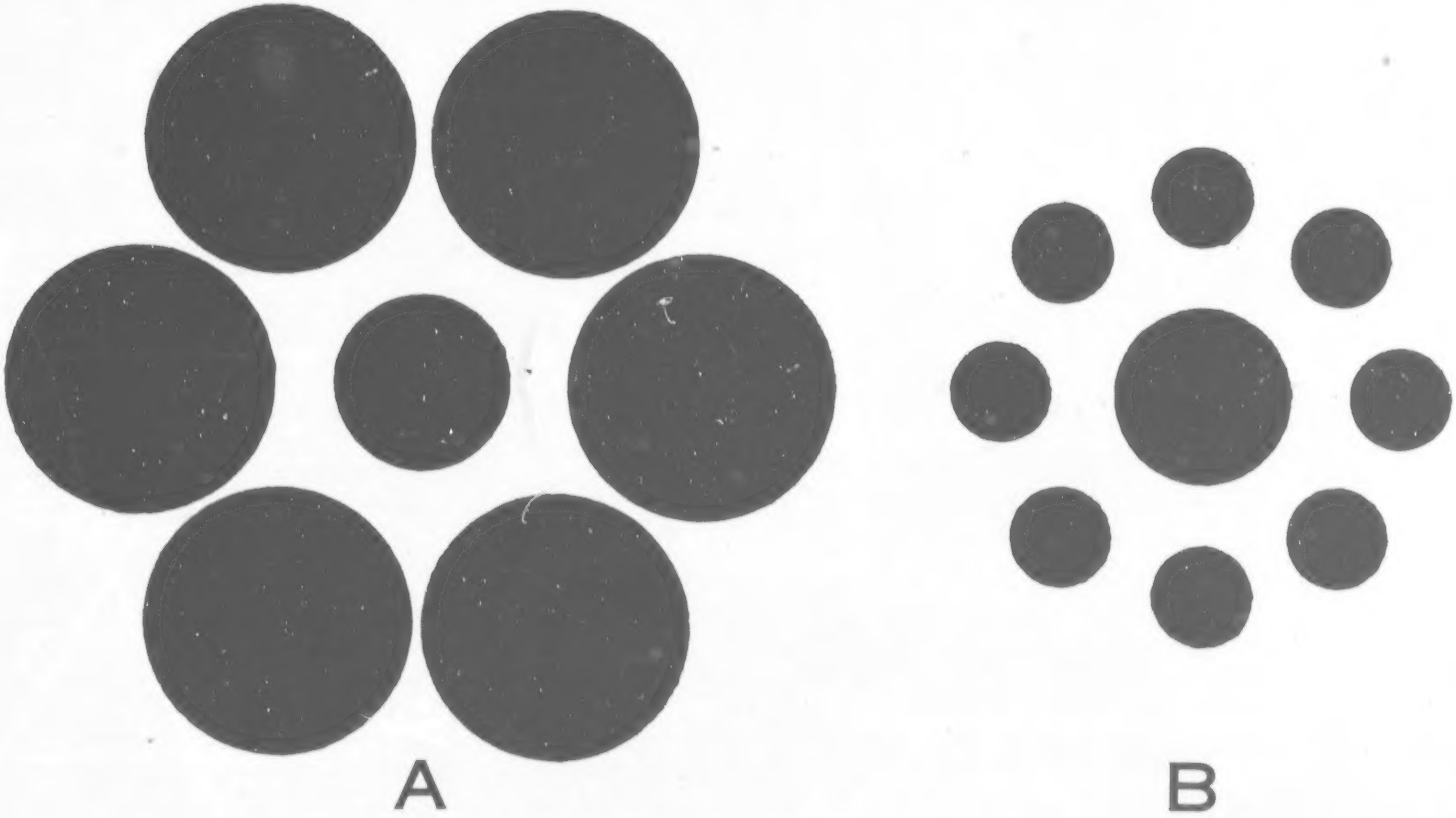
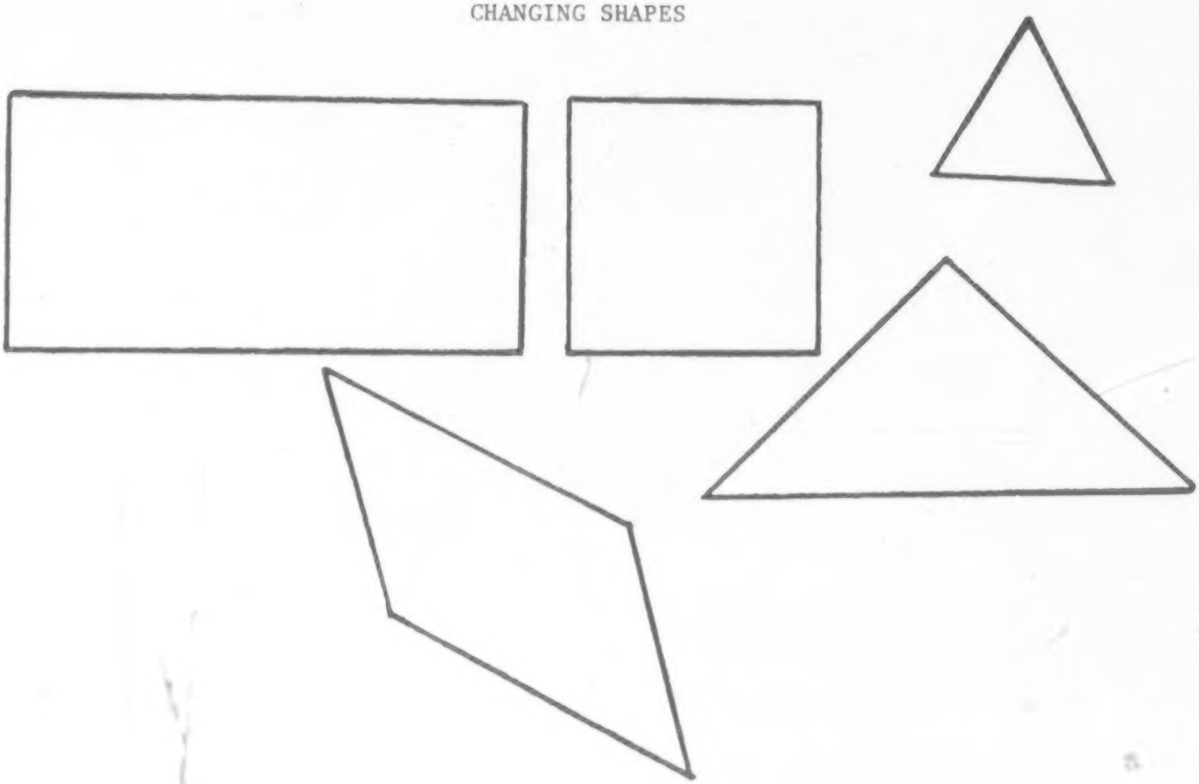
OPTICAL ILLUSION

Which center circle is bigger, A or B? Measure to find out. Which *looks* bigger? Why?

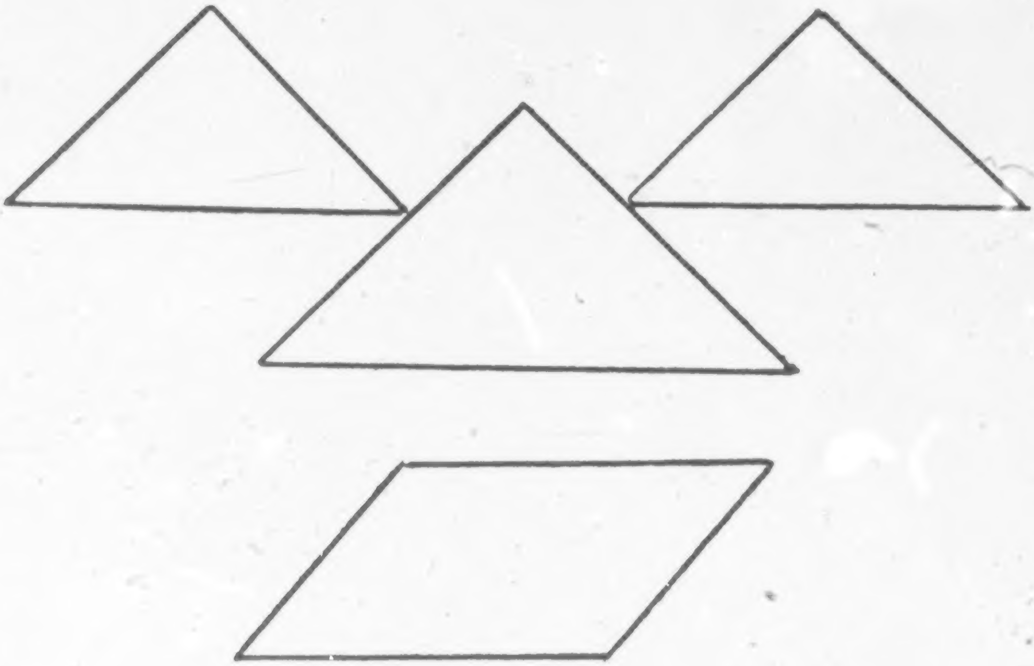


CHANGING SHAPES



1. Using only one shape how many different designs can you make?
2. Using these shapes can you reproduce your original shape in a larger size?
3. Combine the various shapes and create new designs. Trace the outline of your designs on paper.
4. Follow the directions on the following pages for rearranging shapes.

WITH



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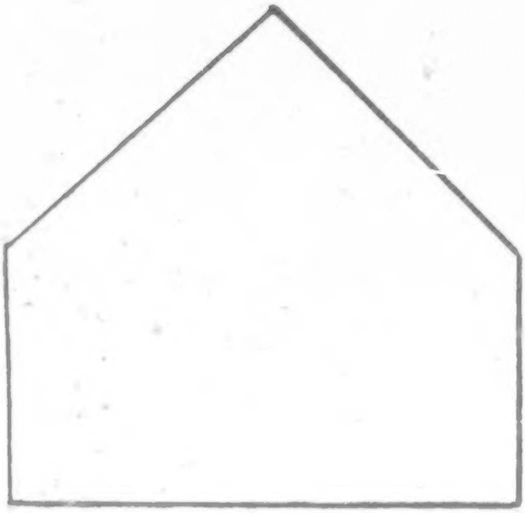

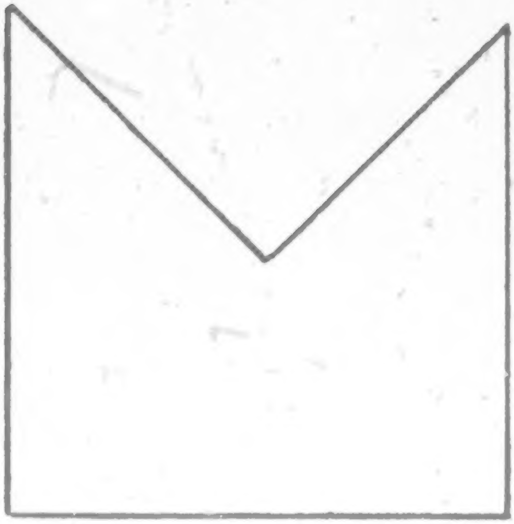

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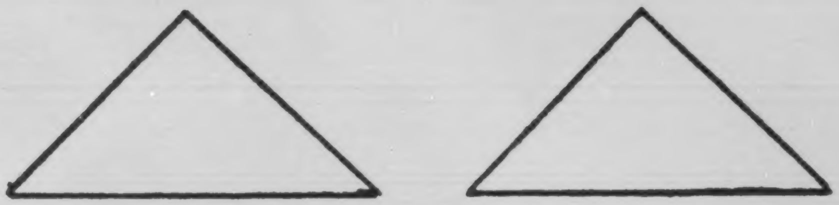

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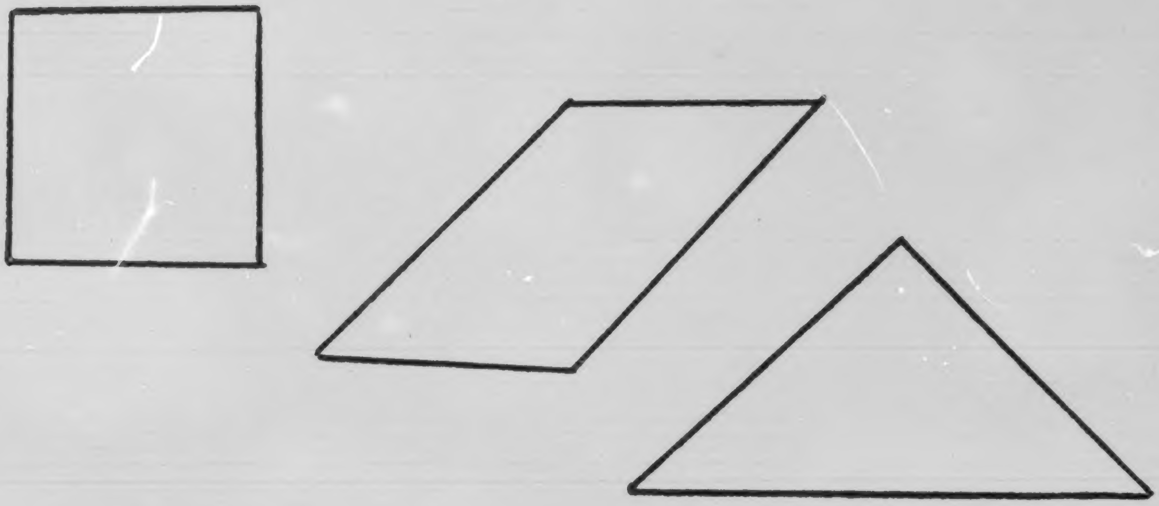

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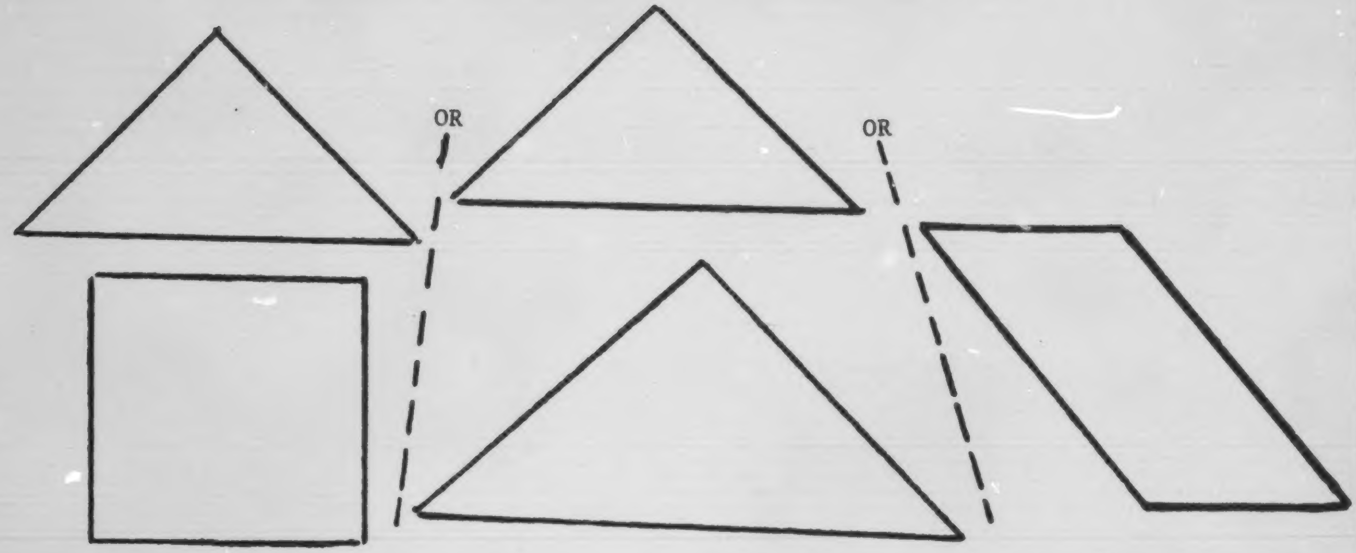

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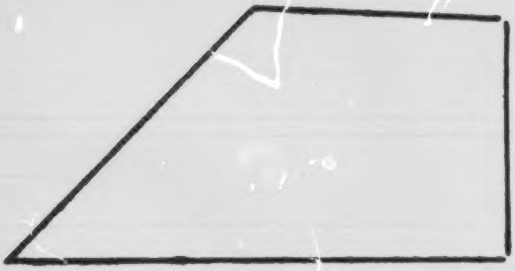

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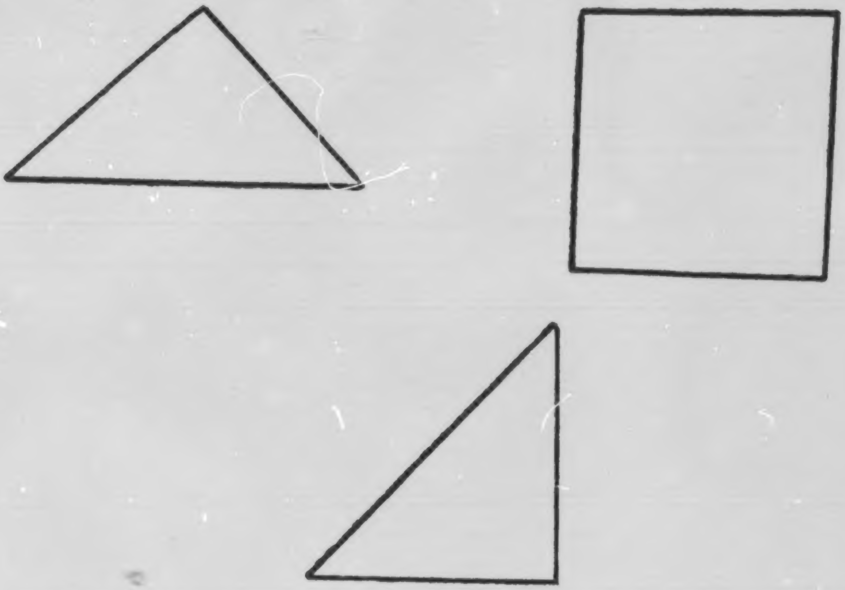

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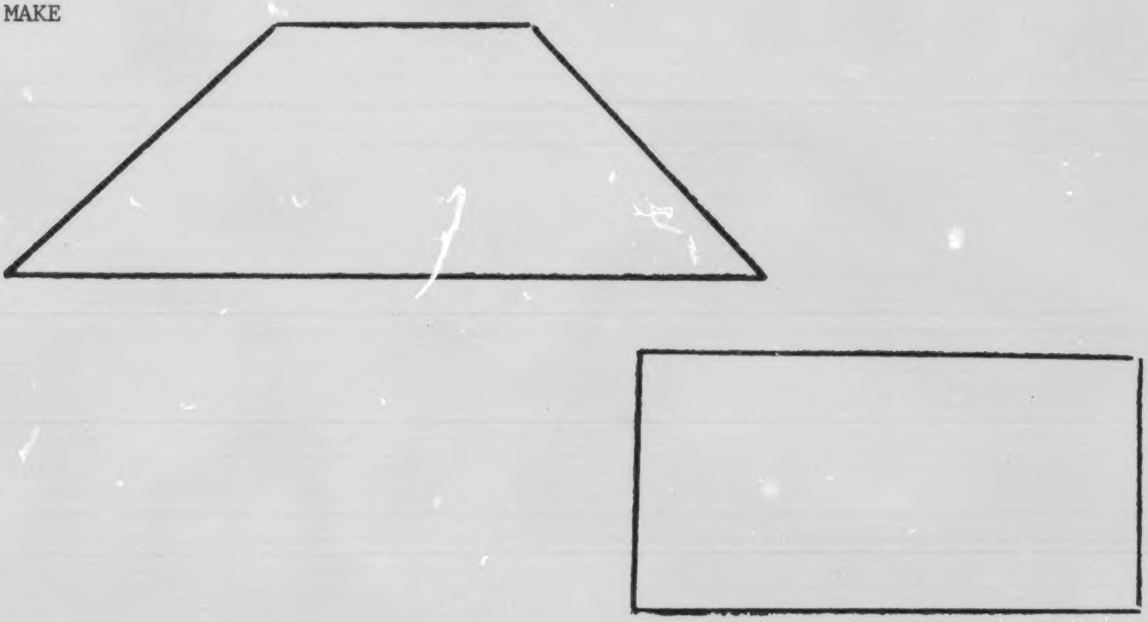

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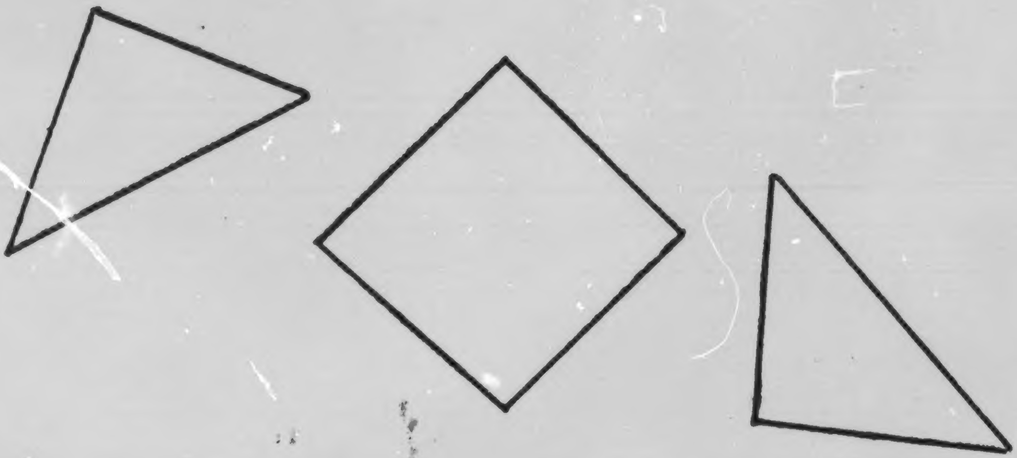

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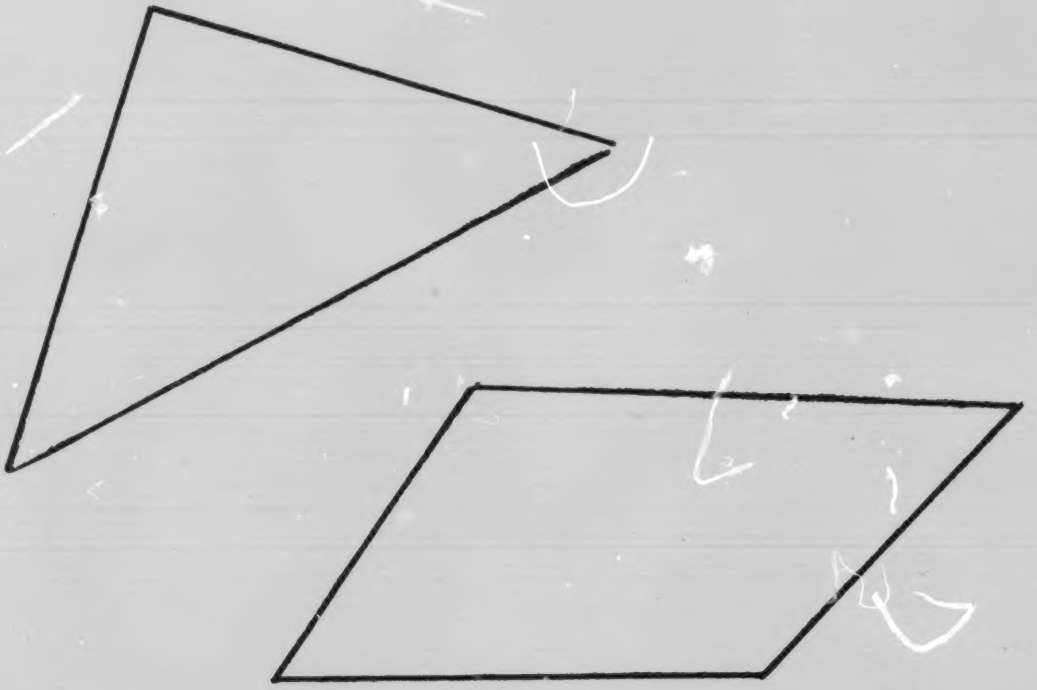

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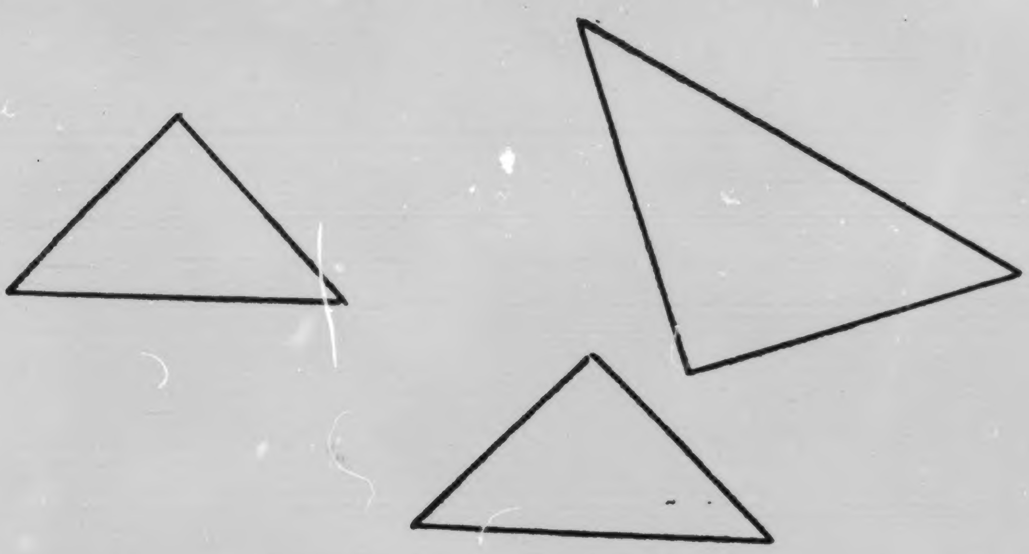

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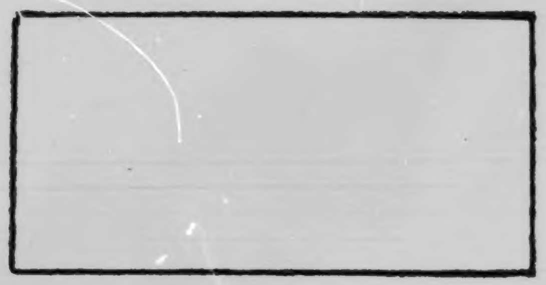

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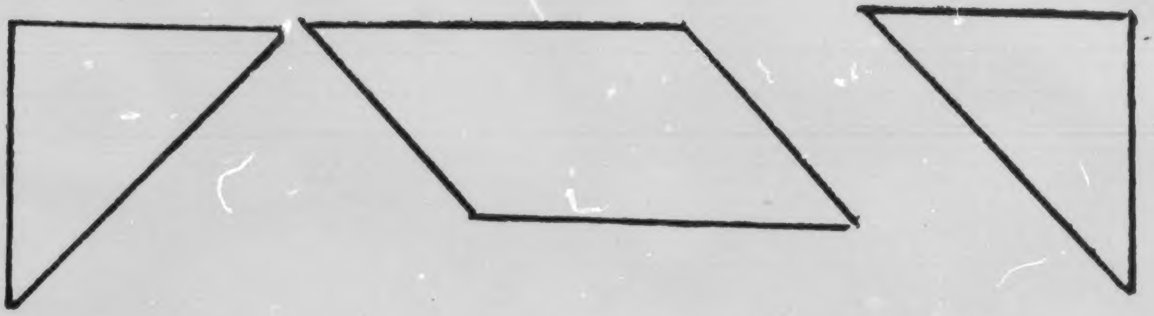

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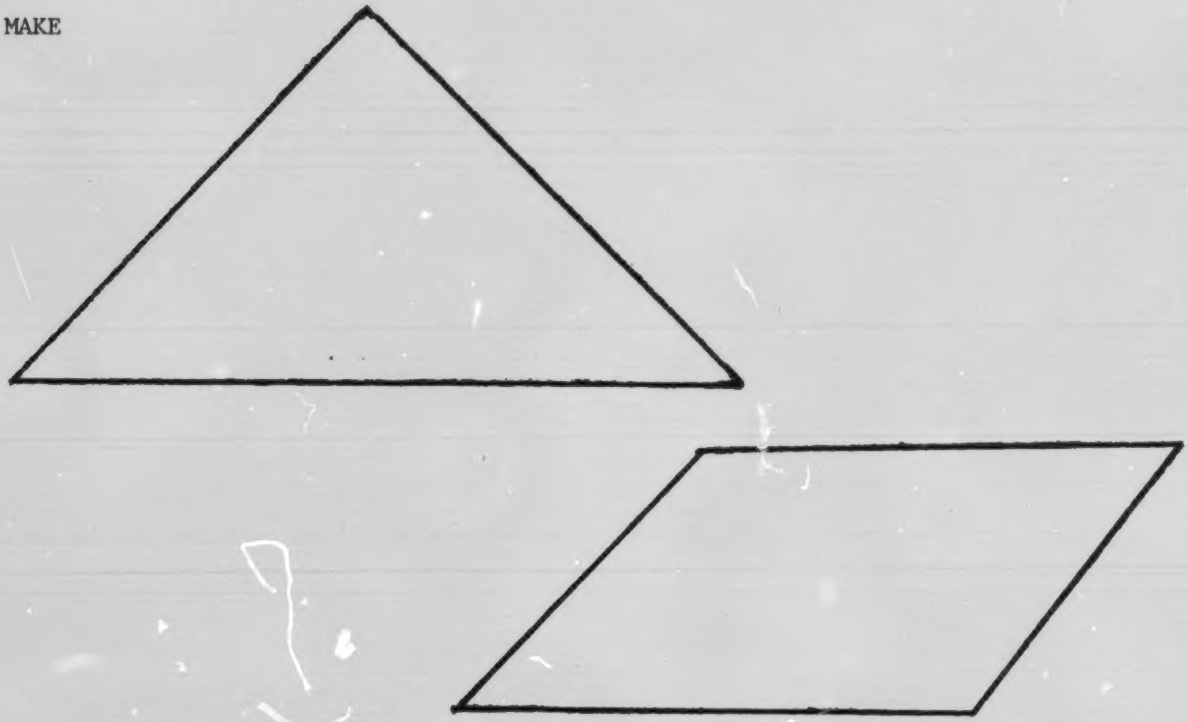

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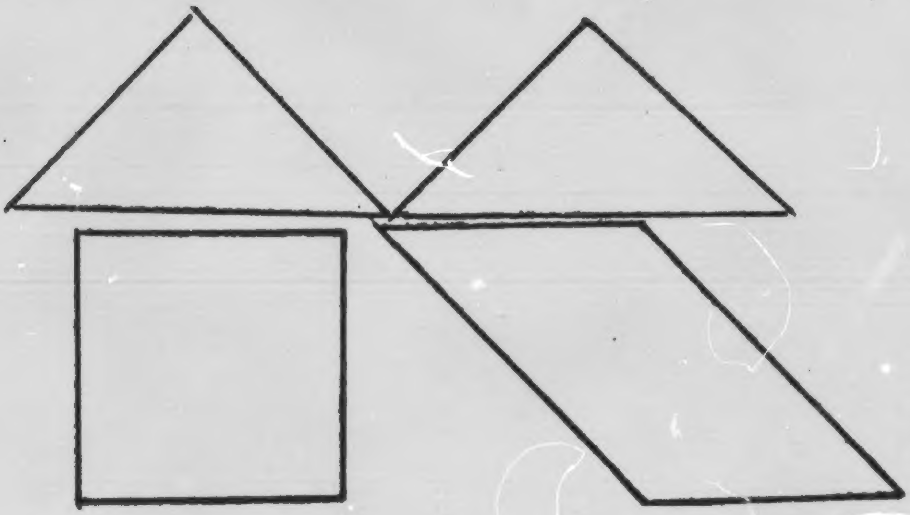

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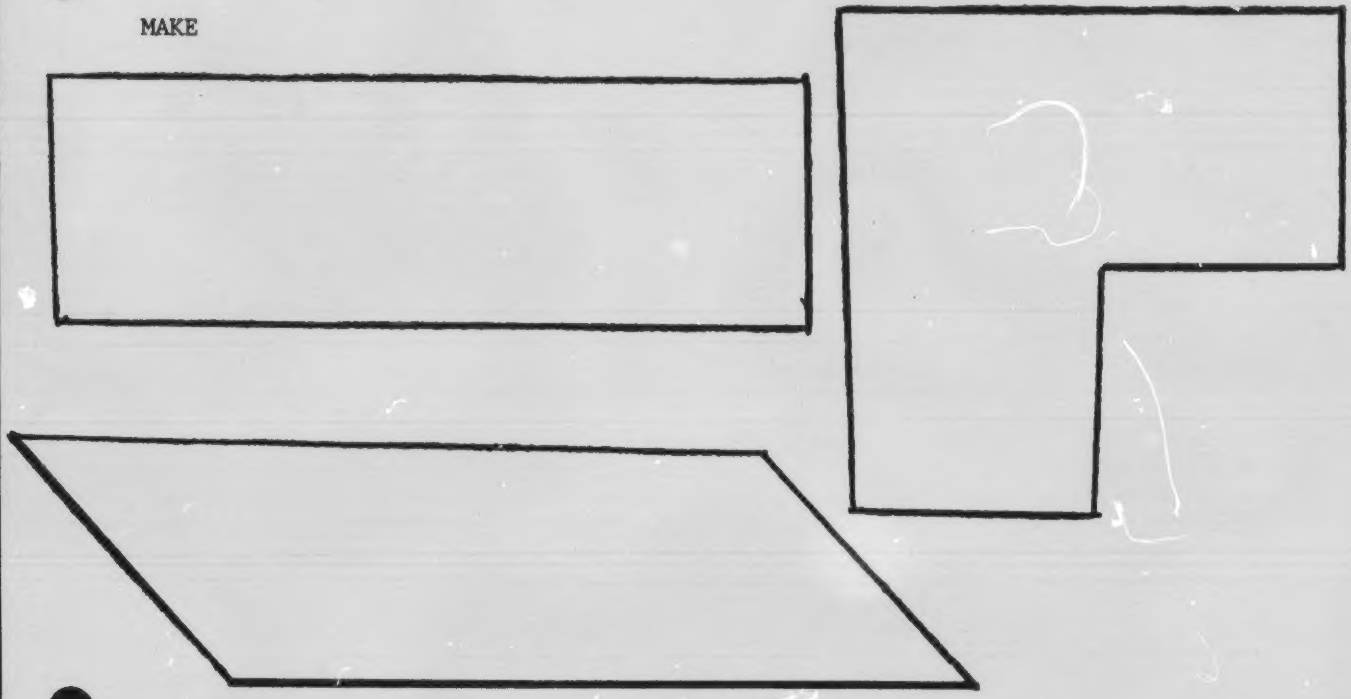

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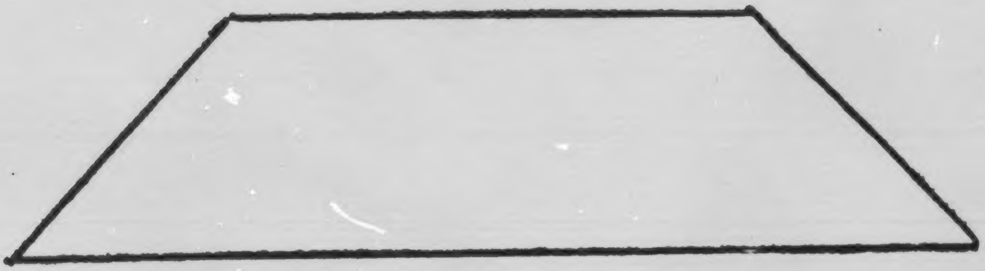

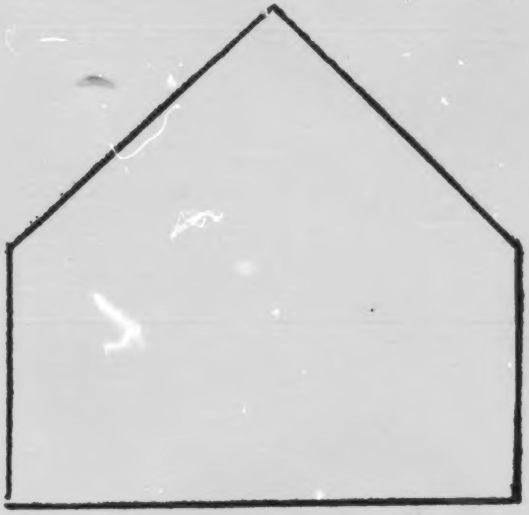

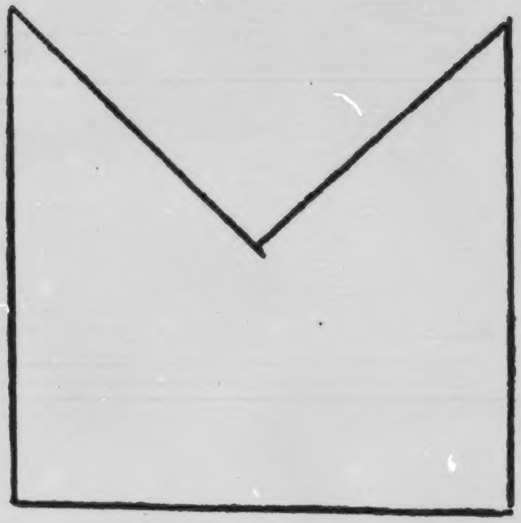

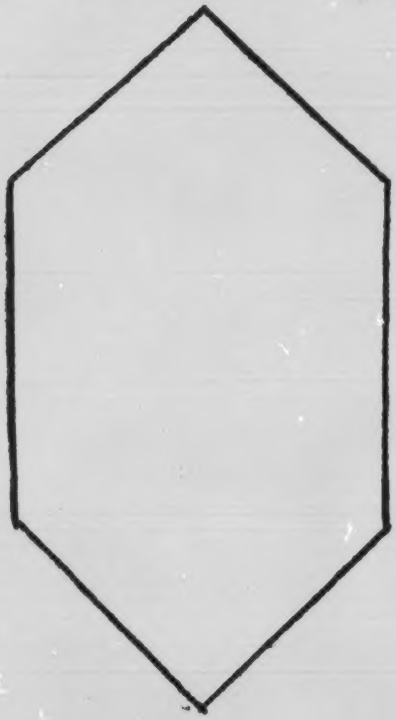

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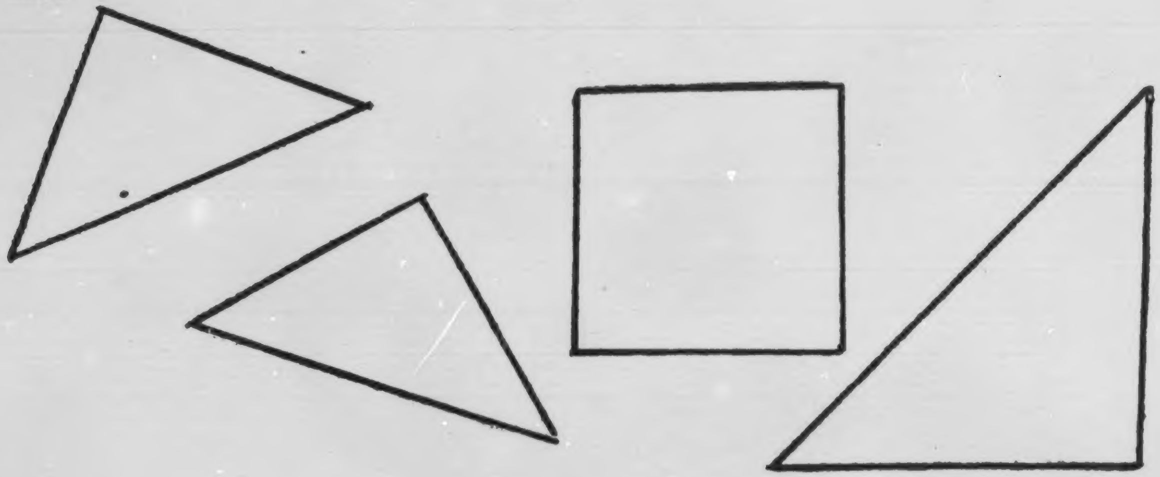

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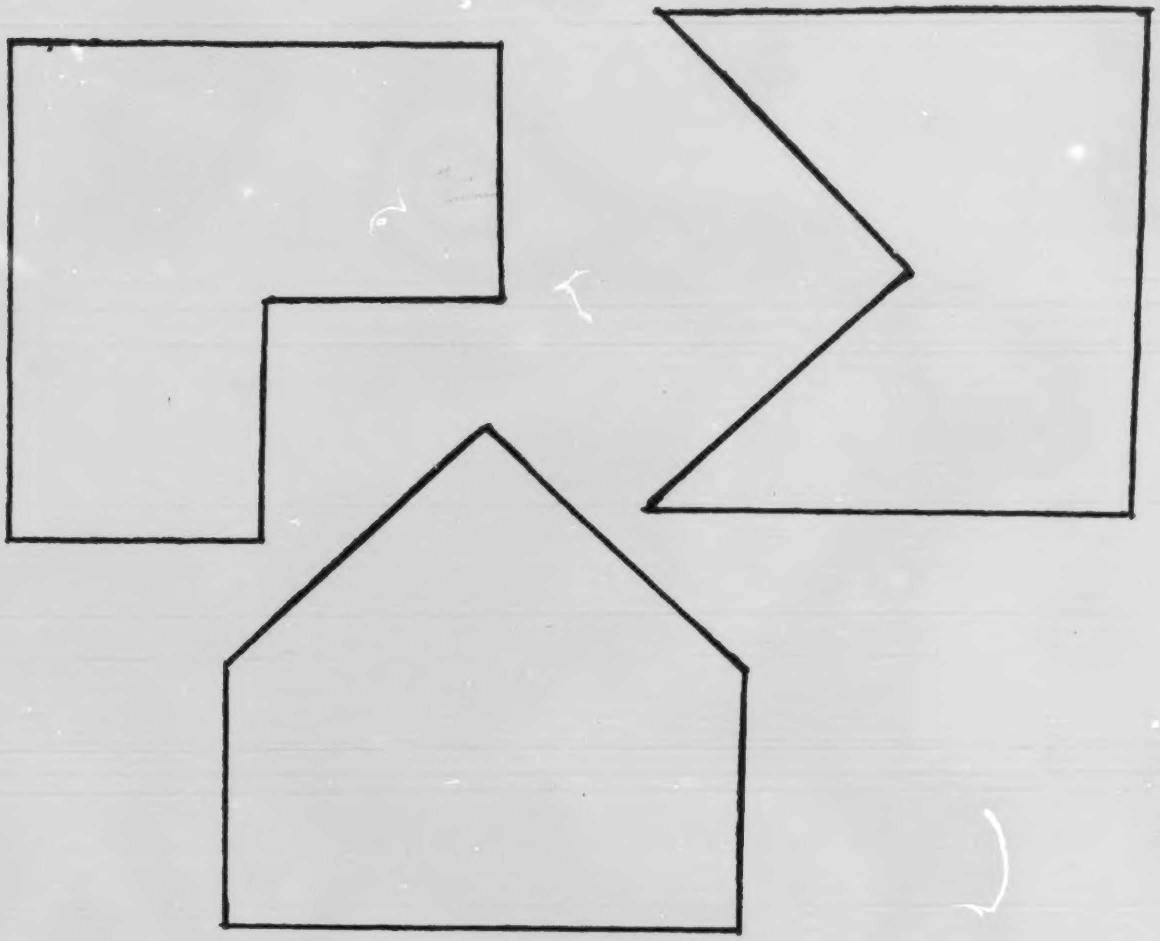

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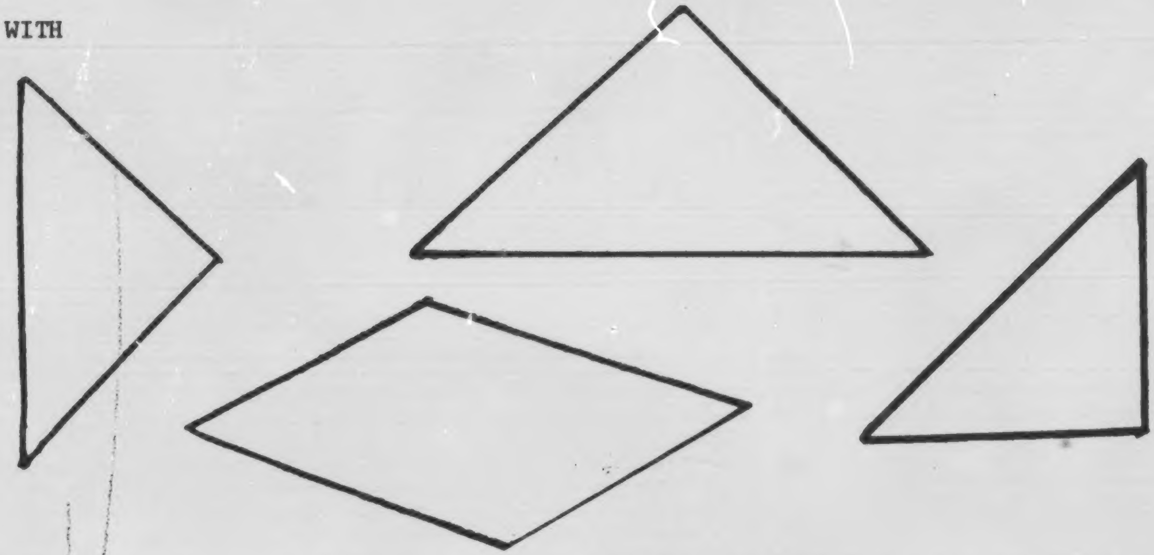

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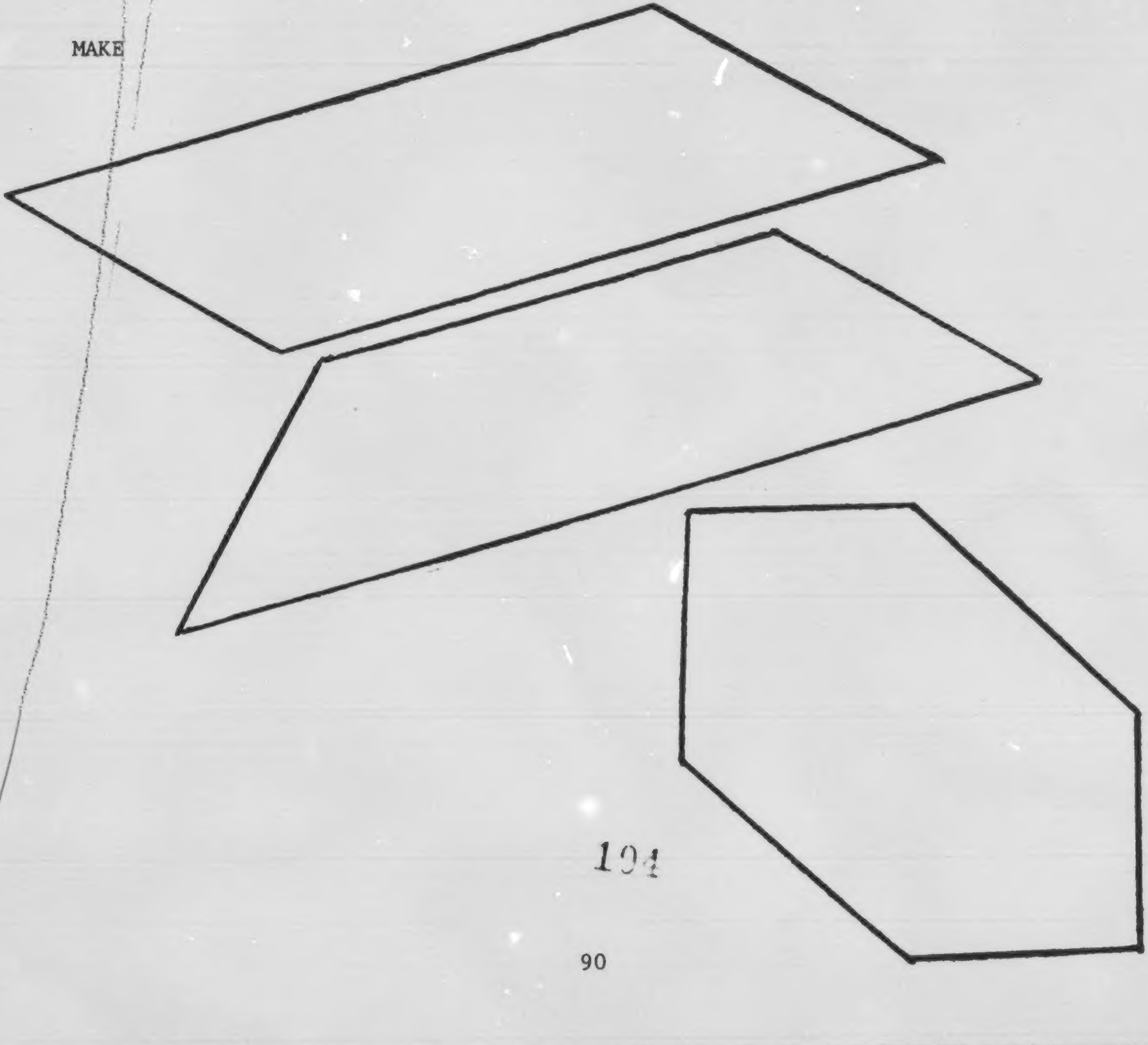


NONVERBAL PUZZLE

Objectives

Development of group-working skills in problem-solving, development of group awareness, and better acquaintance among group members.

Directions

1. A group of five people works at a time. There is to be *no* talking or other direction of one person by another. Each person receives three puzzle pieces and the group task is to put together five squares (6" x 6"), one in front of each person. (See following pages.) The puzzle is not completed until *all five* squares are complete. Although one person must not take pieces unless they are offered, anyone can *give* any number of his/her puzzle pieces to anyone else. Players must not ask for pieces they need.

2. After the puzzle is completed, discuss group feelings as a group. Find out how the first person to complete a square felt about it, how the person unable to make a square felt, and so on.

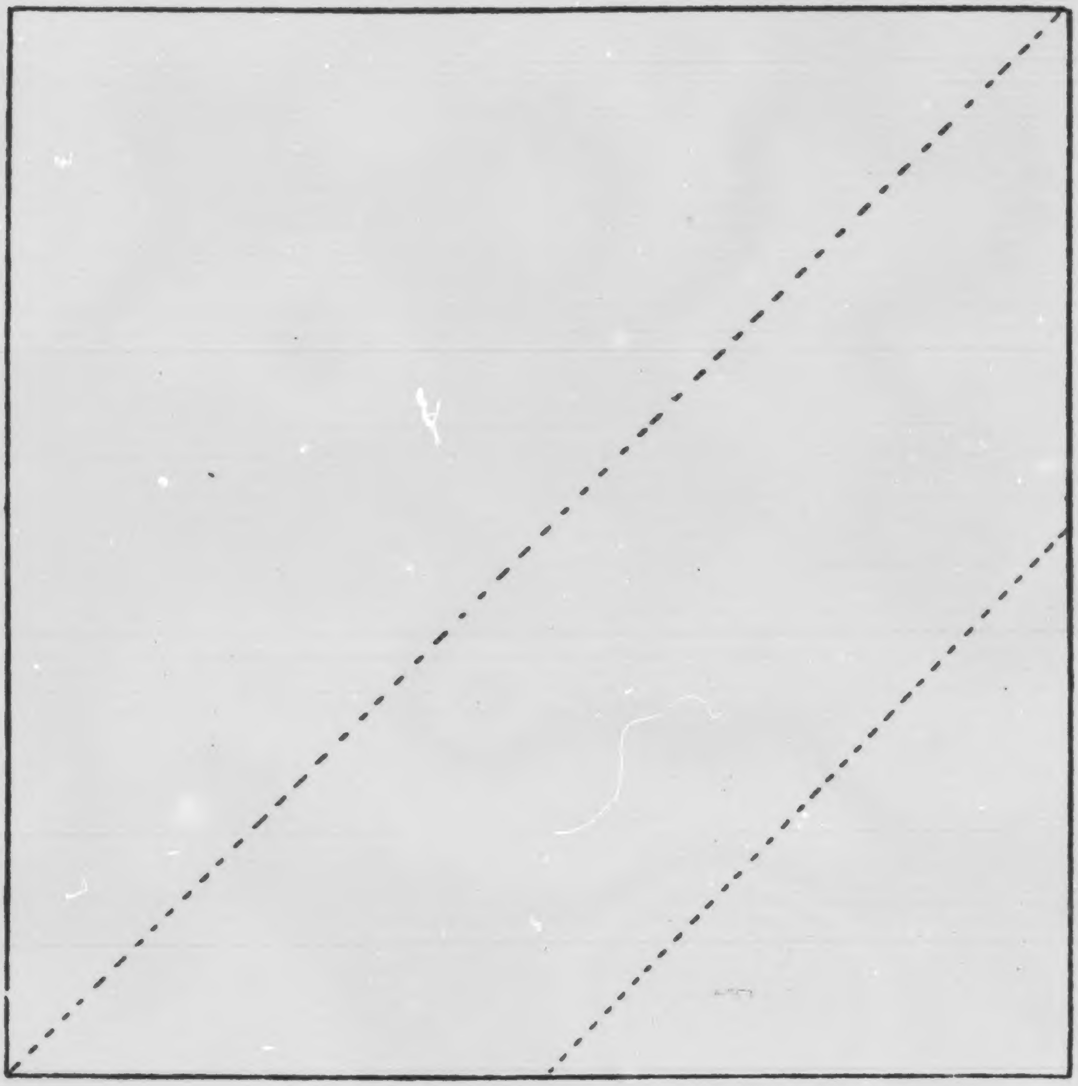
3. Looking on, but not doing the puzzle, other students may act as *process observers,* looking to see how well the group acted together, who was most unselfish in helping others, who did not help, and so on. Observers participate in the discussion of group techniques and critiquing of the process.

Variations

1. Make two sets of puzzles and have two groups work simultaneously. This is good because players feel it is a game, group against group.

2. Allow the process observers to *tag* one of the group, changing places with him/her and helping to solve the puzzle.

This puzzle works well if students are sitting on the floor, although sitting around a table works well too. The discussion about group feelings is most important, as well as the conclusions students draw about working in a group.



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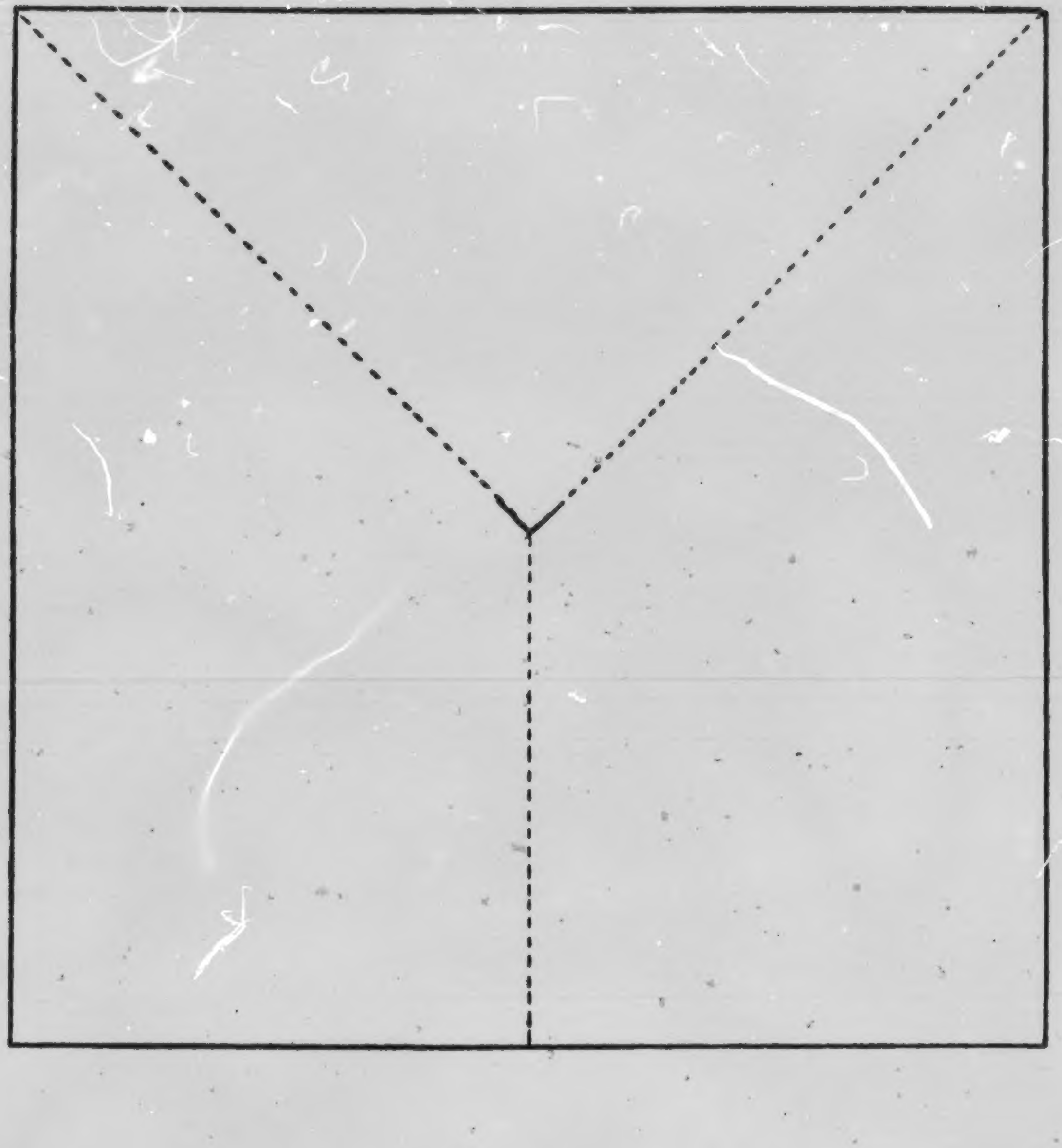
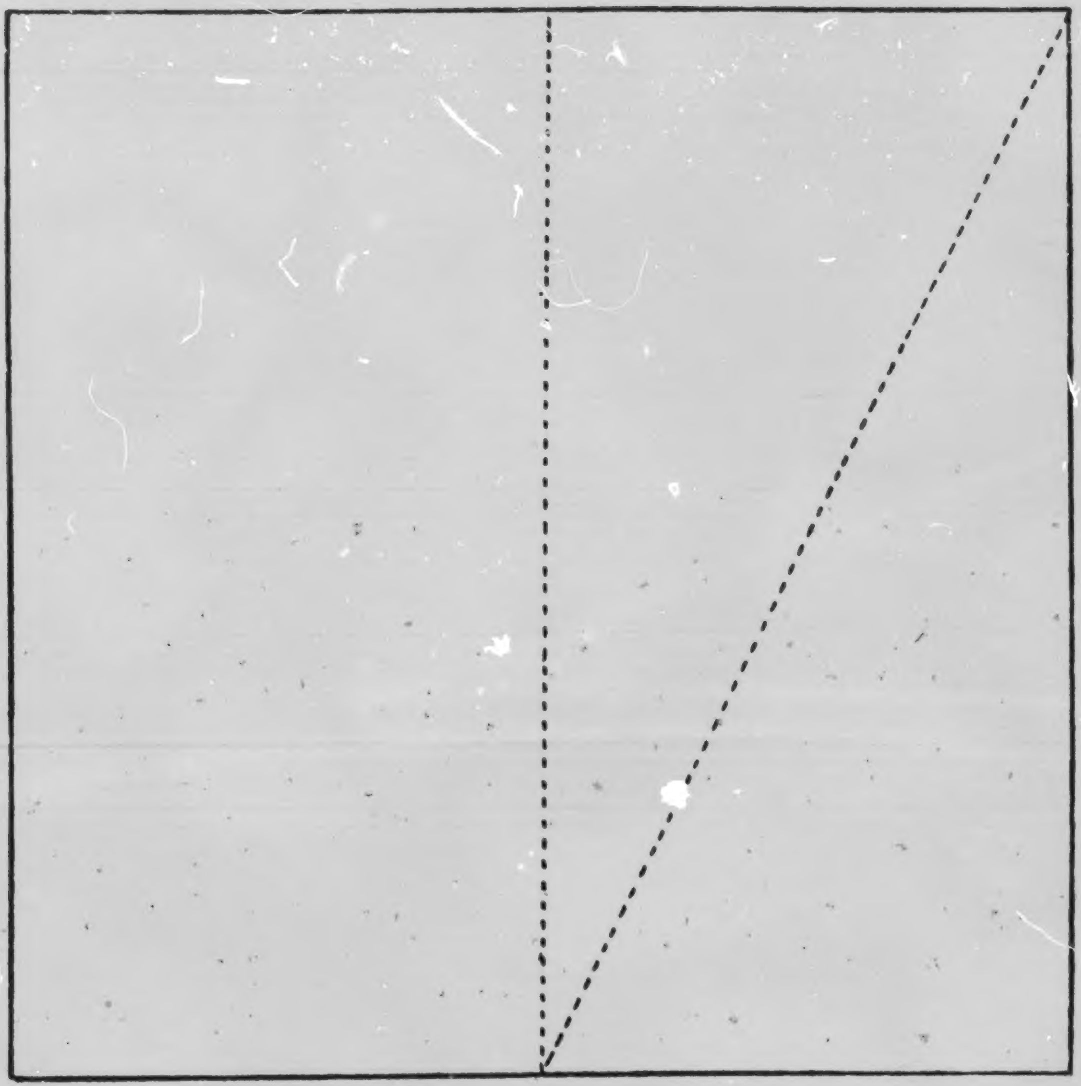
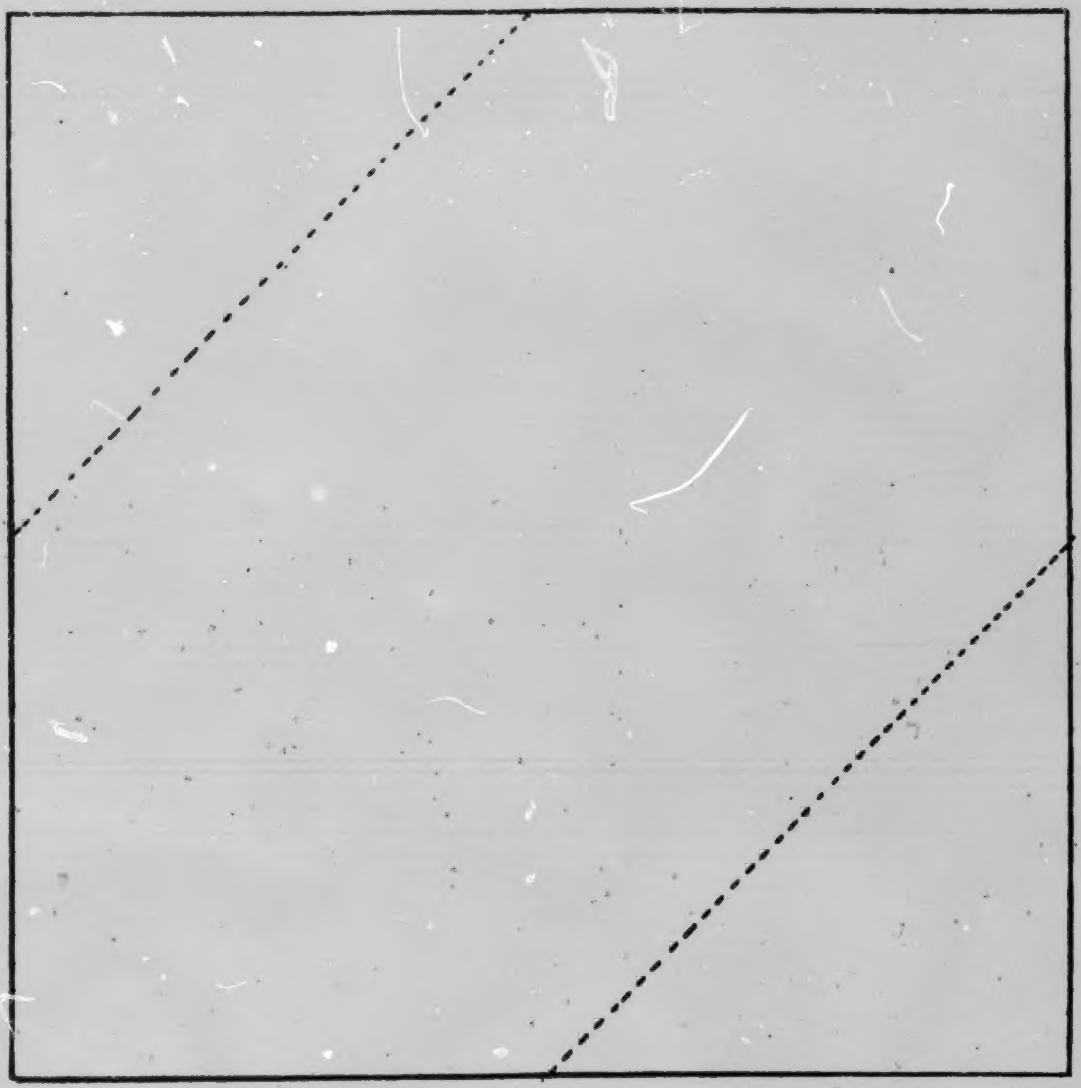
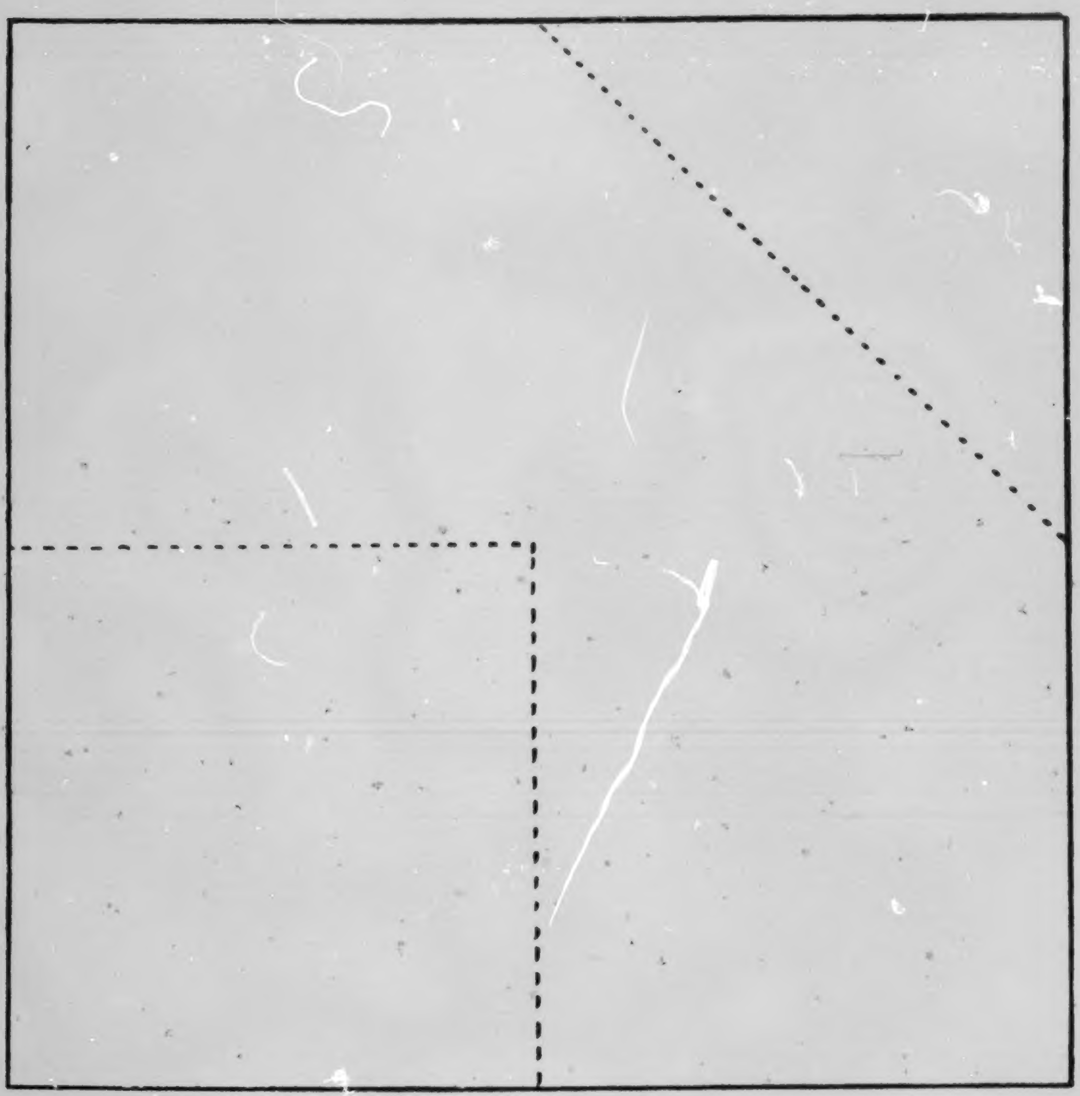


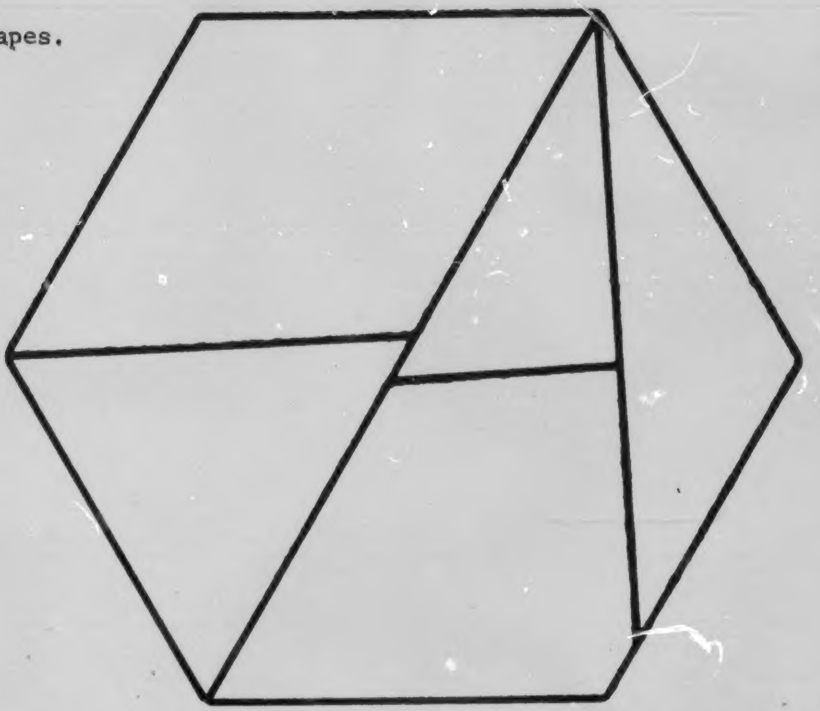




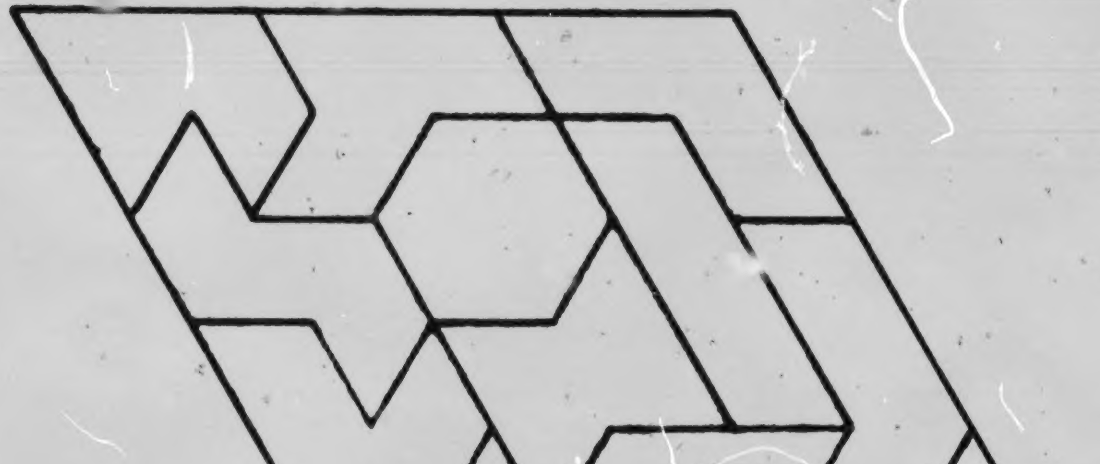


PUZZLES

Form a square from these shapes.



Can you cut this apart and fit it back together?



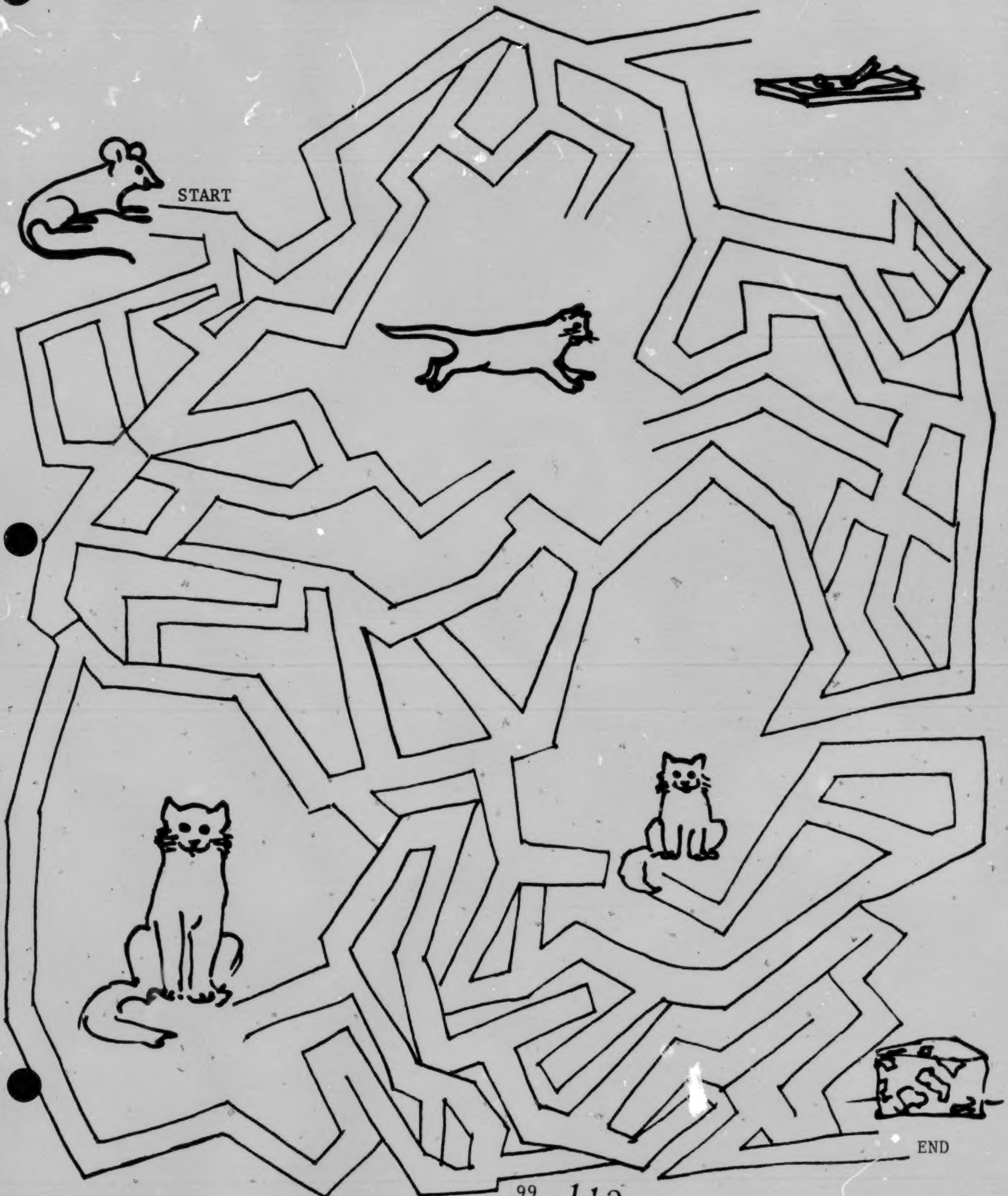
MAZES

Collect a variety of mazes. Categorize them according to difficulty:

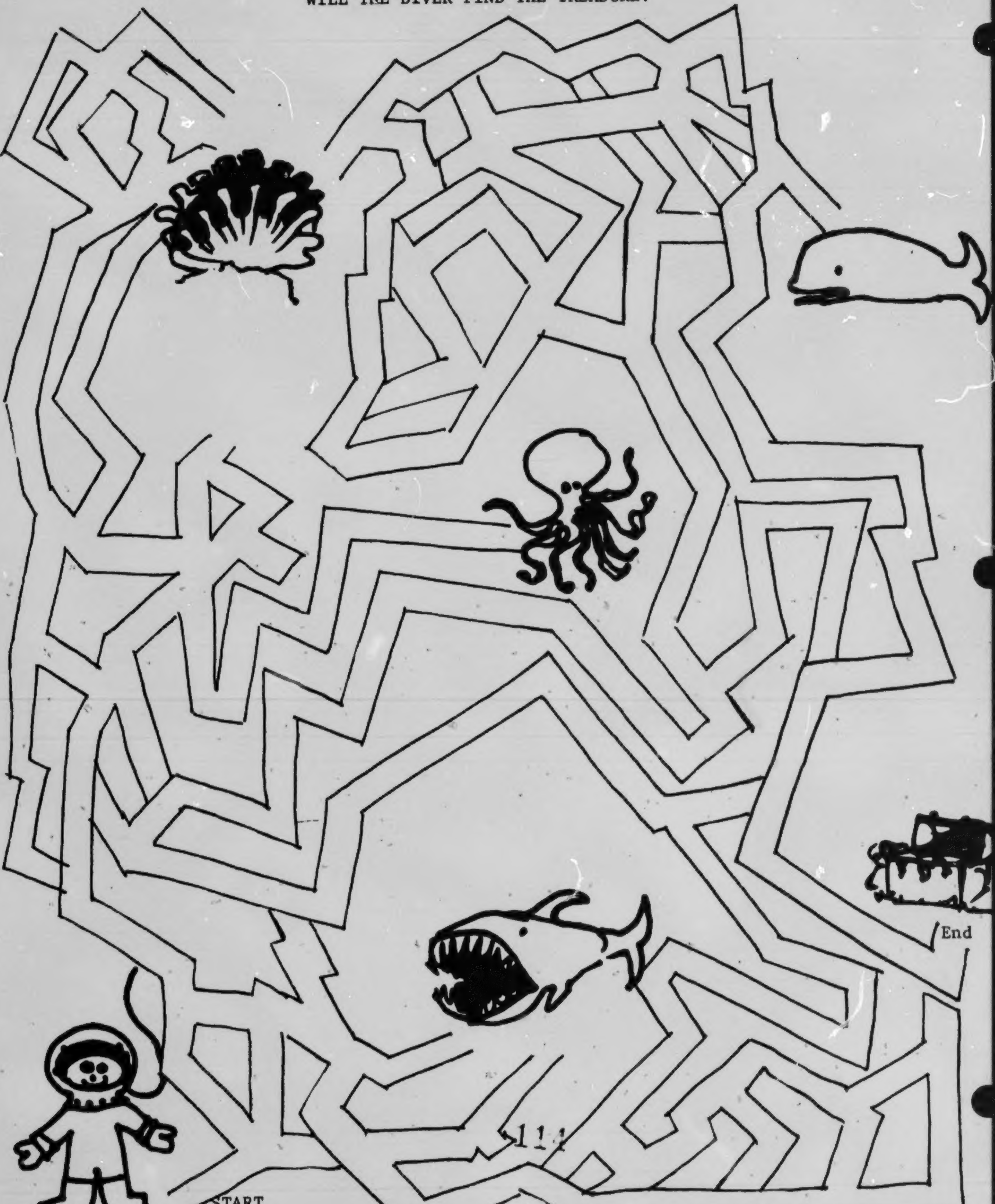
1. Cinchy
2. Tricky
3. Perplexing

Choose a maze and find your way through it. Record the time it took you on a line graph. Go through the maze five times and record the minutes on your graph each time.

HELP THE MOUSE FIND THE CHEESE

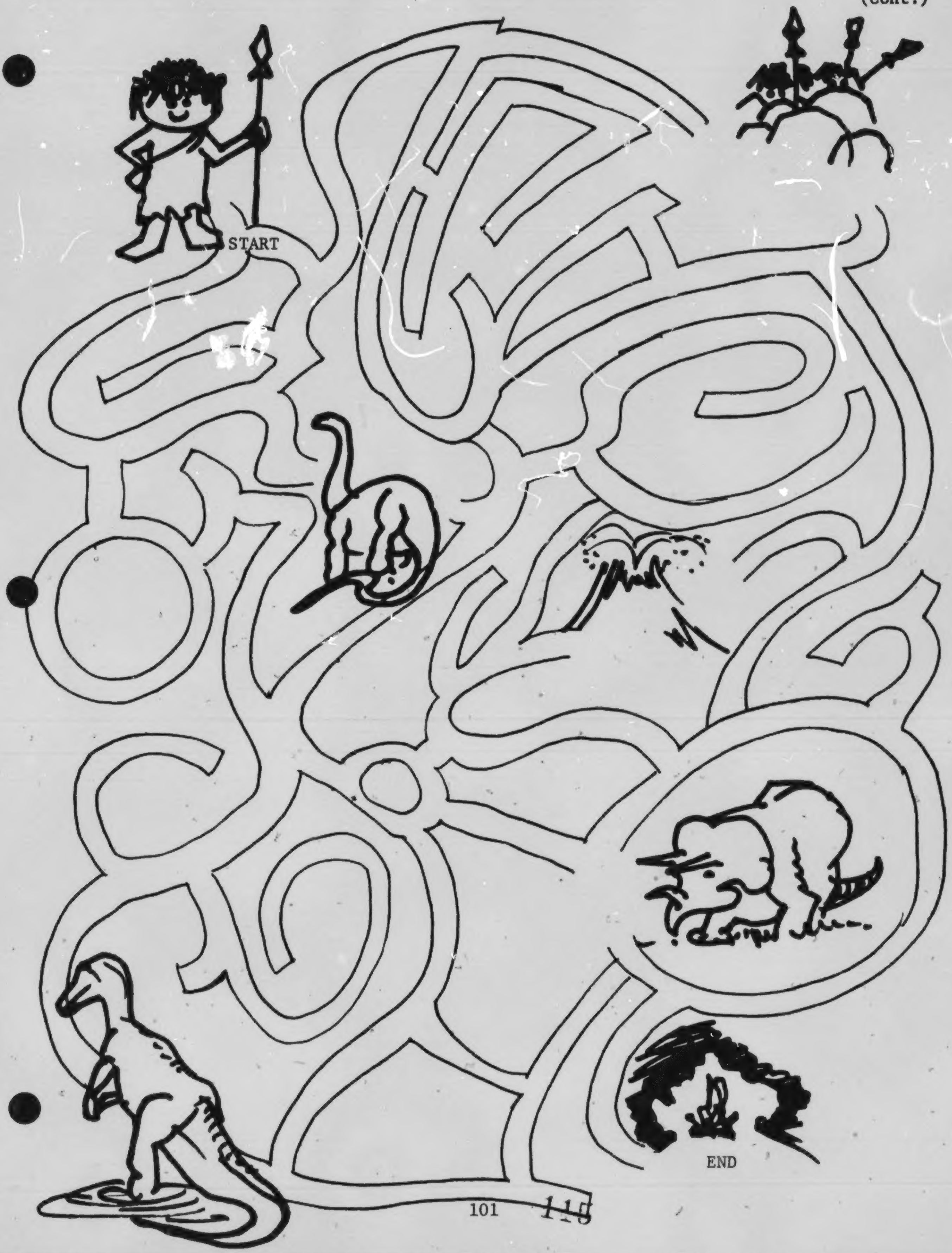


WILL THE DIVER FIND THE TREASURE?

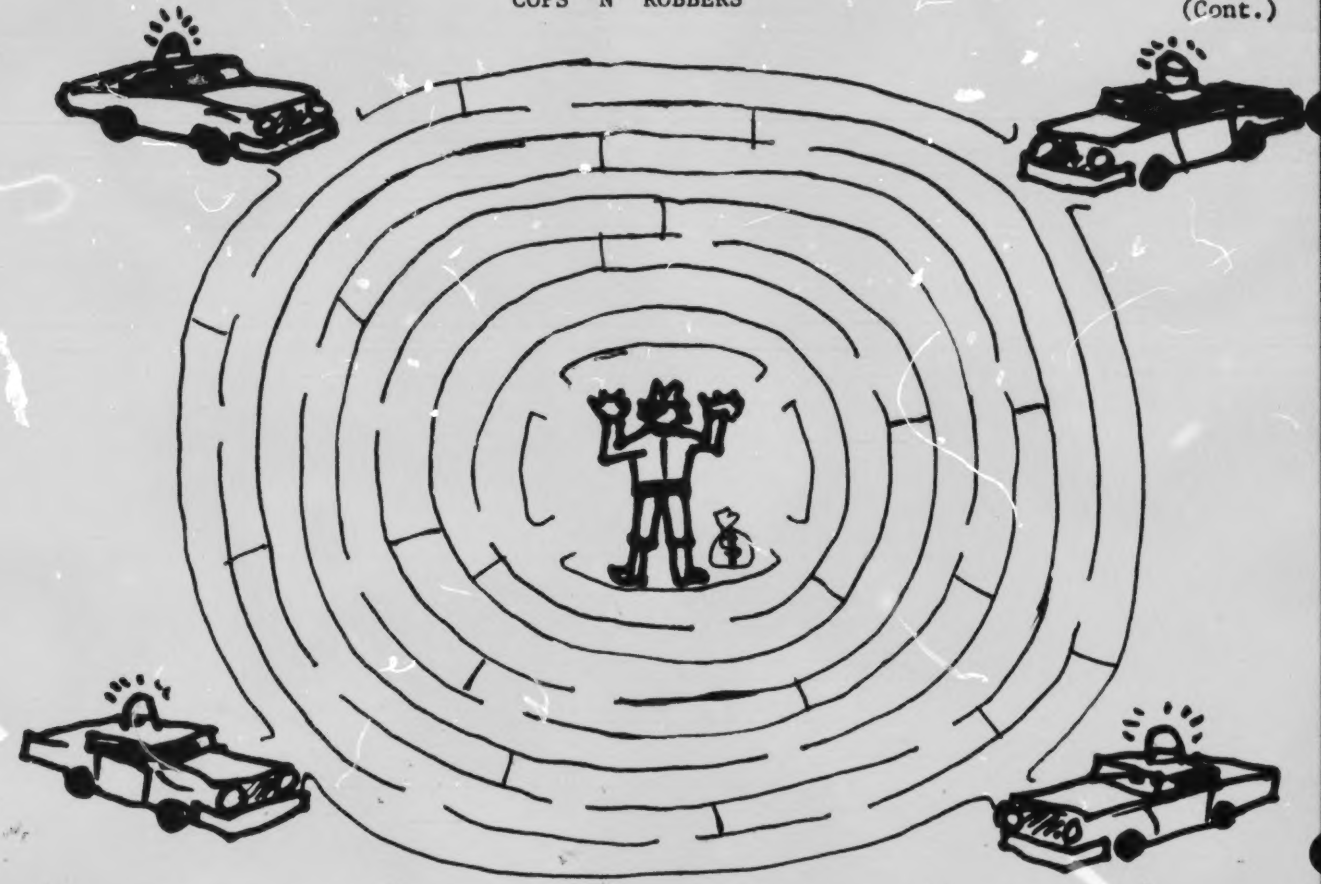


CAN THE CAVEMAN FIND HIS WAY HOME?

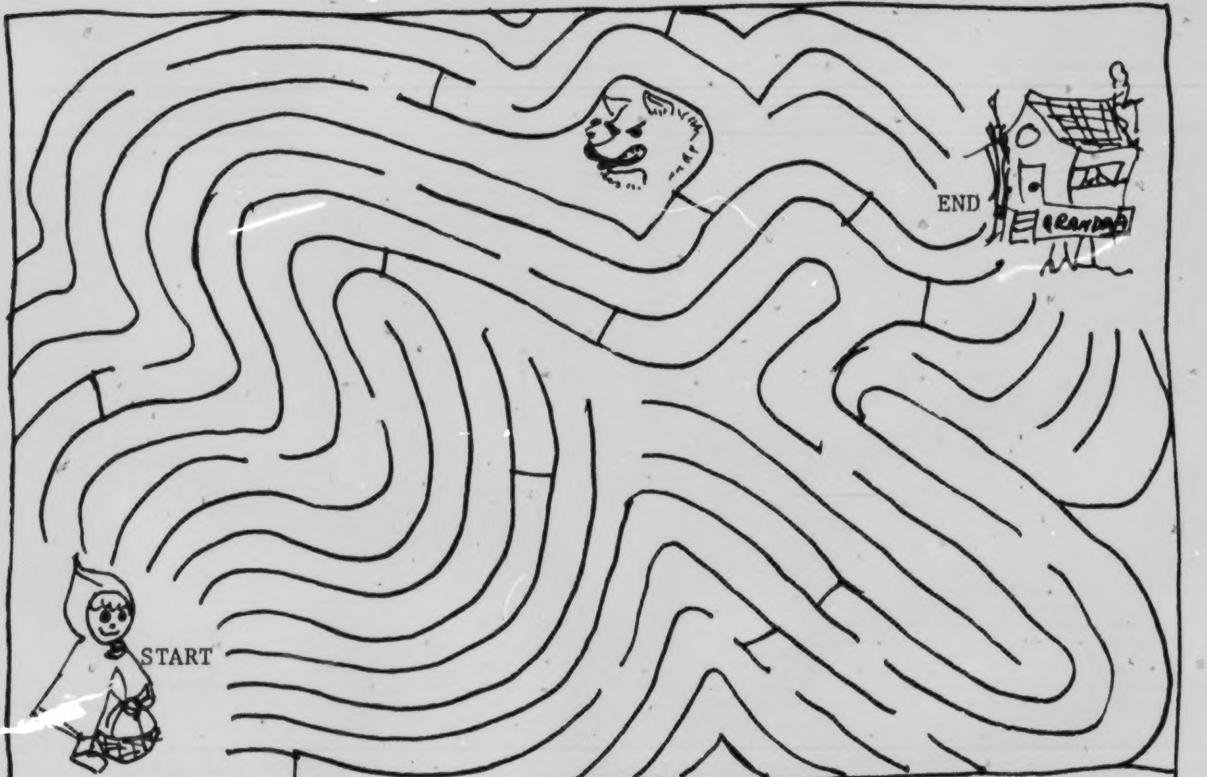
CFI-3
(Cont.)



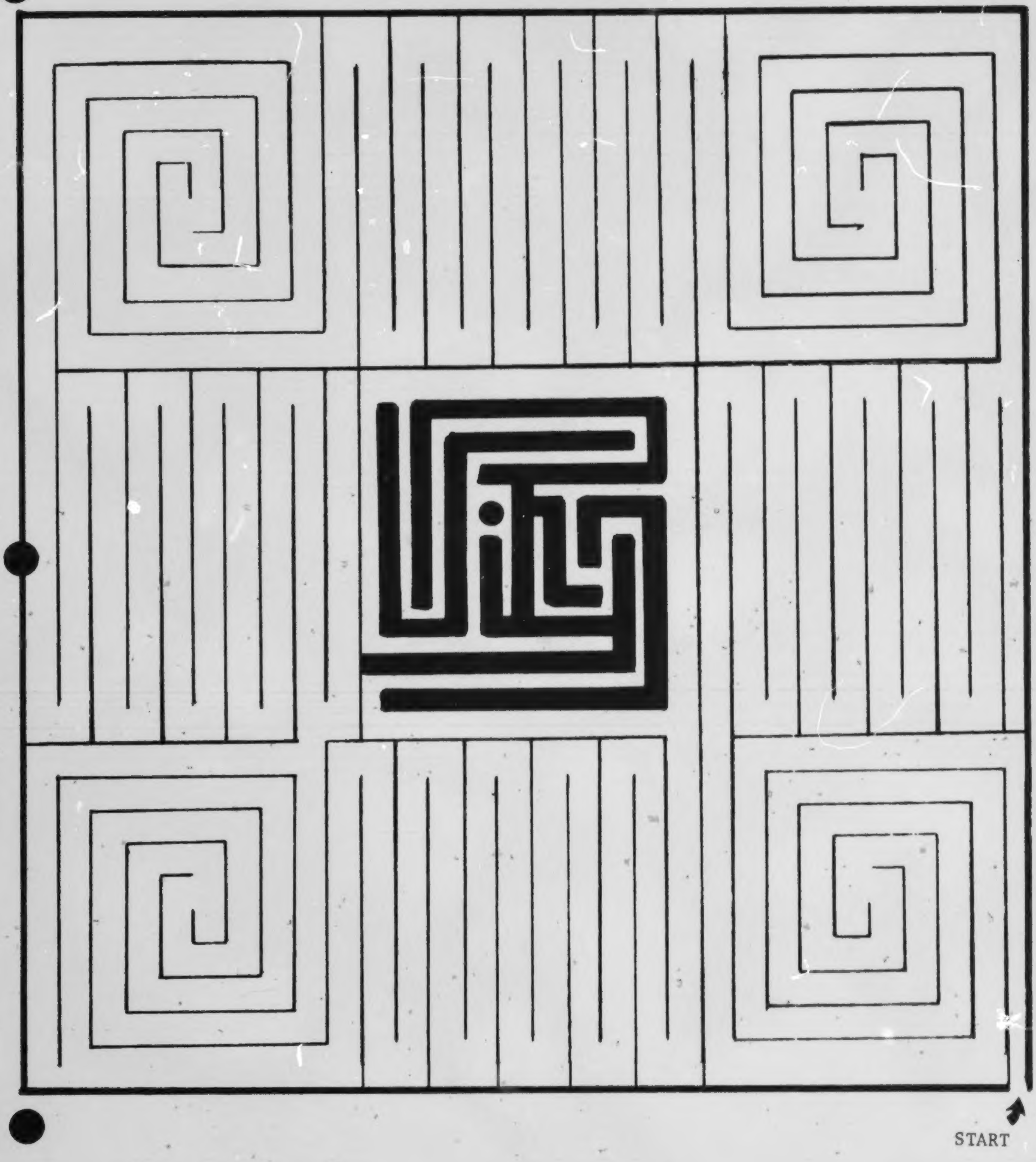
COPS 'N' ROBBERS



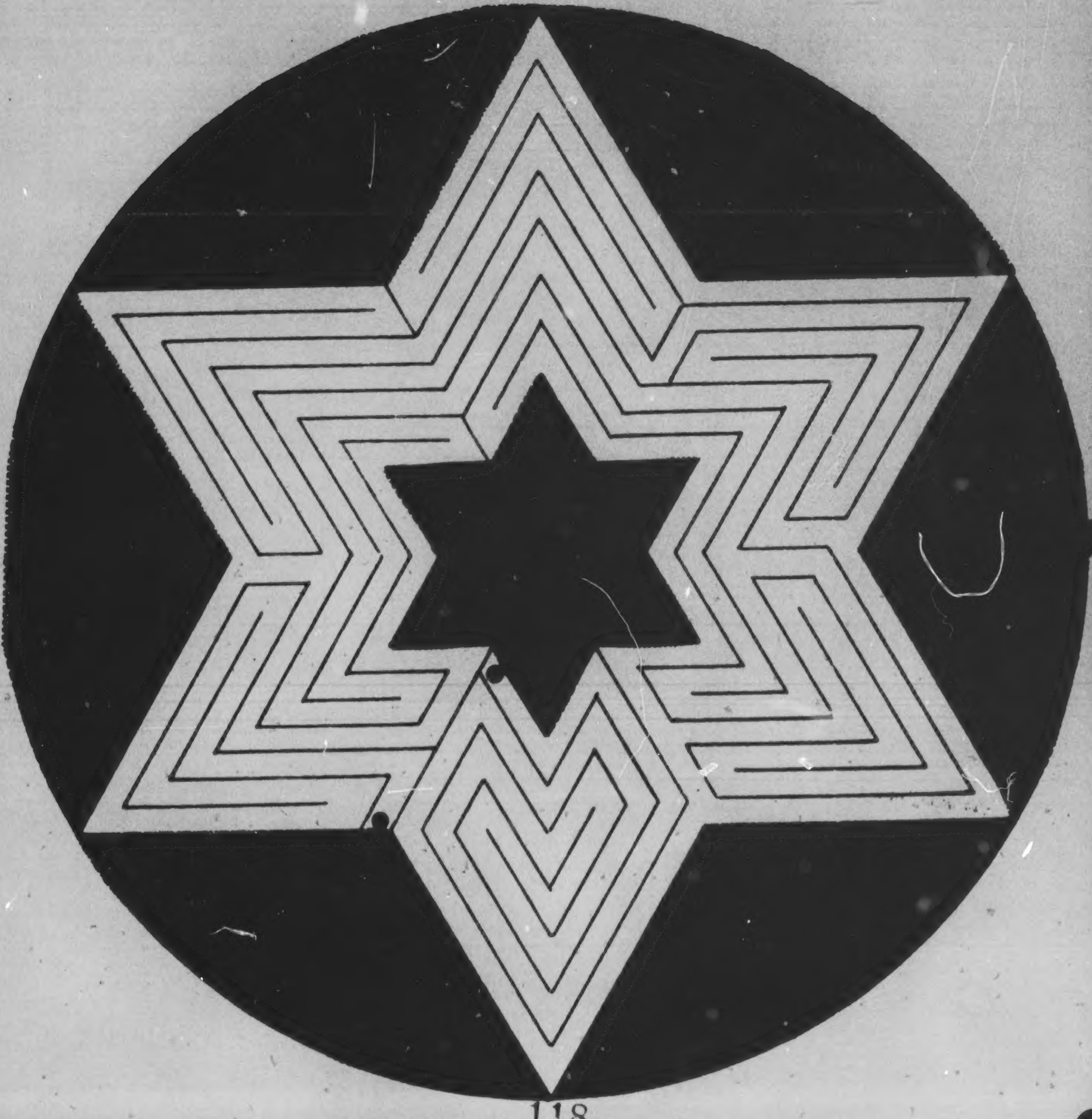
HELP THE GIRL IN RED



MAZE



SIX POINT STAR MAZE



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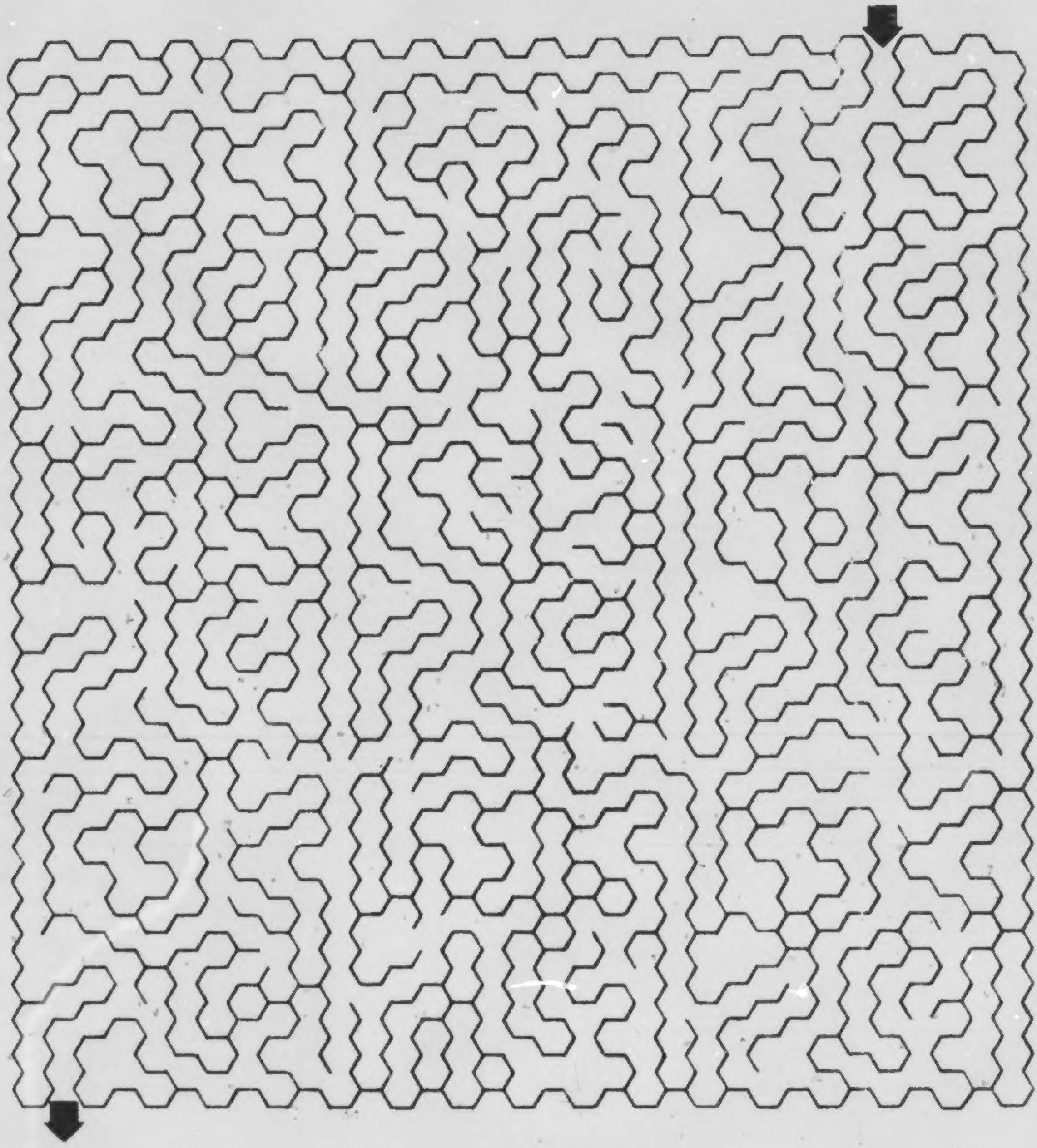
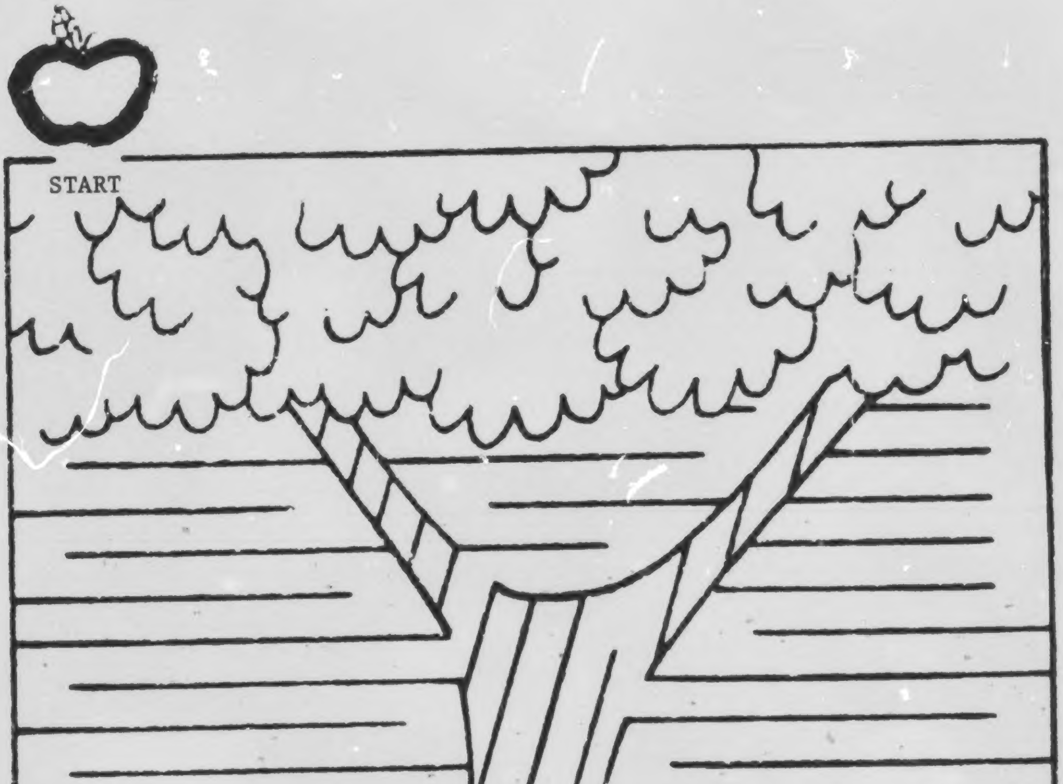
TRACE THE MAZE



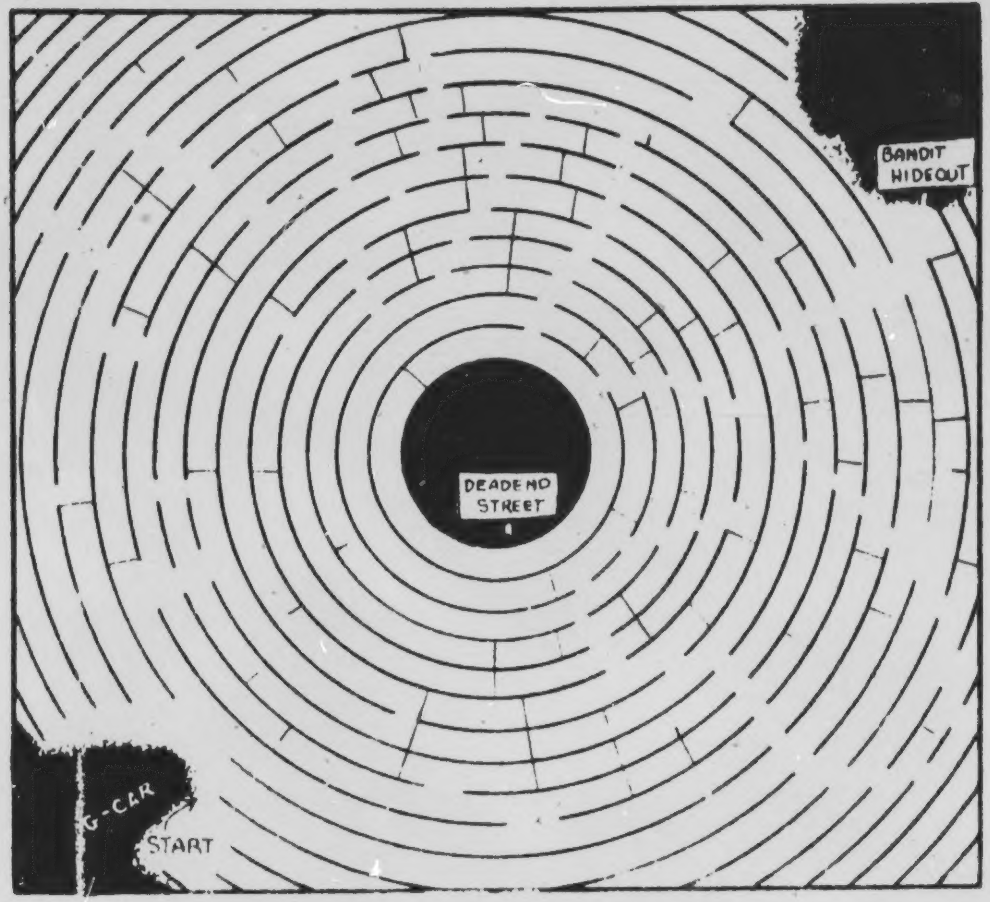
APPLE MAZE

Begin at the word START, and see if you can trace a path from the apple to the man's head without crossing any lines.



G-MAN CIRCULAR MAZE

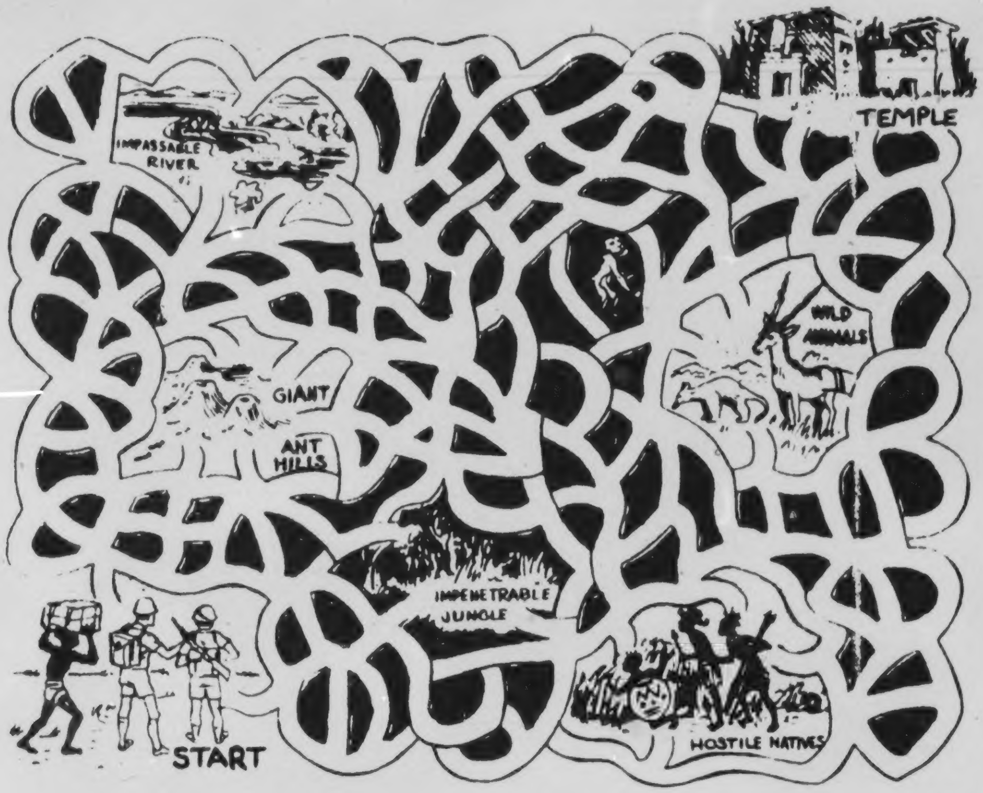
Bill Stacey is hot on the trail of some bandits. Take your pencil and start in the "G" Car. You must not cross any solid lines. What's the quickest route to the Bandit Hideout?


BANDIT
HIDEOUT
DEADEND
STREET
G-CAR
START

JUNGLE DISCOVERY PICTURE PUZZLE

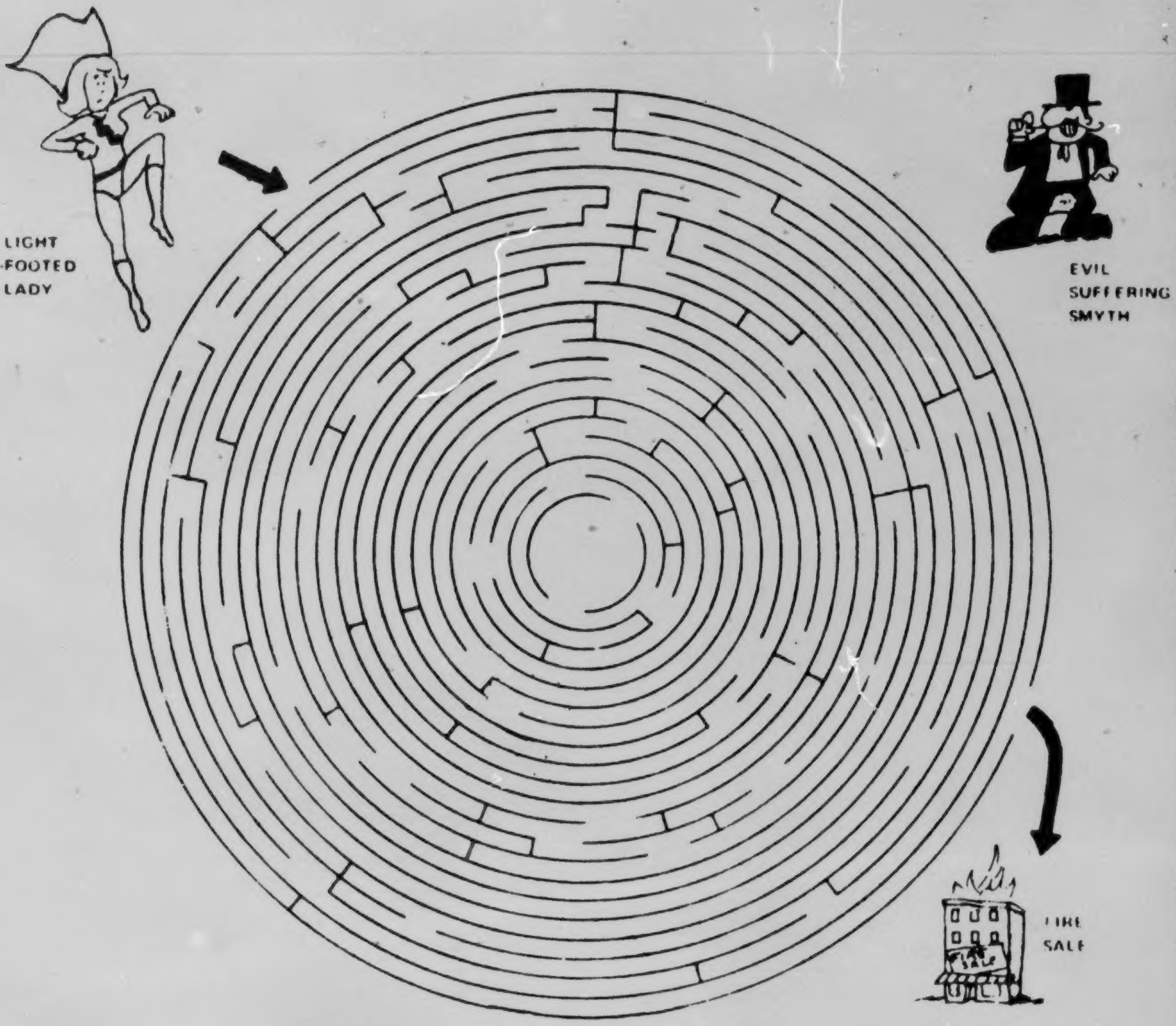
Sir Arthur Covingham is off on an expedition in Africa. He is looking for the long-lost temple of the Mogjuglao tribe. Can you help him find the shrine?

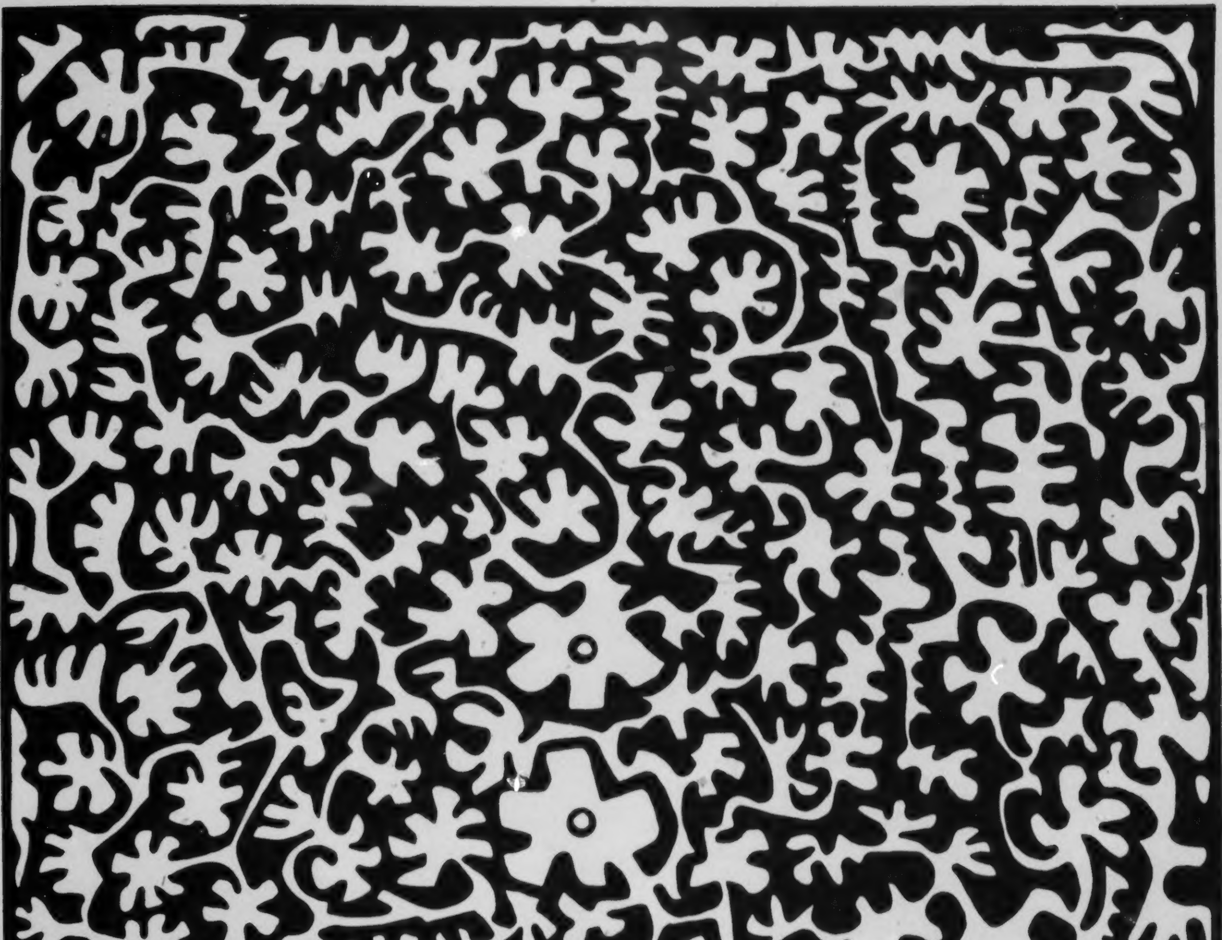
Use your pencil to trace a path from start to temple without crossing any of the lines.


IMPASSABLE RIVER
TEMPLE
WILD ANIMALS
GIANT
ANT HILLS
IMPENETRABLE JUNGLE
START
HOSTILE NATIVES

CIRCULAR REASONING

Carol Cashew, mild-mannered secretary for a great metropolitan publishing company (who is in reality Lightfooted Lady, champion of justice and nemesis of evildoers) was on her way to put out a fire sale when she was confronted by a maze built by her arch enemy, the evil Suffering Smyth. Not hesitating, she weaved her way through the maze and arrived at the fire sale in the nick of time. How did she do it?


LIGHT
FOOTED
LADY
EVIL
SUFFERING
SMYTH
FIRE
SALE



go from ○ to ○

SPELLING BEE

Start with any letter in the square below, move one square at a time in any direction until you have spelled out a common English word of four or more letters. For example, you can start with H in the top row and easily spell HURL. Do not use proper names; and do not form plurals by adding "s" to three-letter words. Par on this one is 20 words in 25 minutes. There are at least 29 words hidden in this puzzle. Perhaps you can get more.

C	A	Q	H	S
B	N	R	U	K
S	G	V	L	O
W	T	M	I	P
Z	Y	E	D	J

FIND THE WORDS

Find all possible words within the squares of this puzzle. You may move up, down, sideways or diagonally. The same letter square may be used twice in the same word if another letter is used in between. In the example below, the letter "R" is used in the word "roar", but "O" and "A" are used between.

C	A	M	A	R
O	R	N	E	D
R	D	S	T	I
P	E	R	O	N
E	B	U	A	E

BREAK THE CODE

In the following story, numbers have been used instead of letters. Each number represents a certain letter. Your task is to break the code and decide what letter each number stands for.

1. Read through the story as much as possible.
2. Choose one number that you can be sure of the letter it replaces. Change that number to the letter in the entire story.
3. Do the same for each number in the story until you have broken the code.

A Trick

One ho5 d3y, 37 w3n5ed 50
173y 3 5264k on h6s f26end, 135.
He offered h6m some 64e-4o7d 7emon3de.
When 135 53s5ed 65, he m3de 3 5e226b7e
f34e. 37 73ughed be43use he h3dn't
pu5 3ny sug32 6n 65. 5h35 w3s 3
123456437 joke.

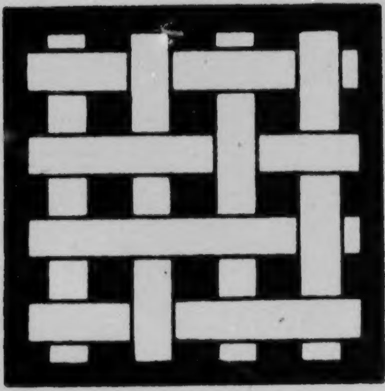
Break the Code

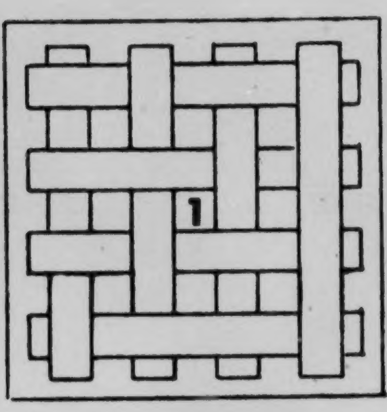
1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
7. ______________________

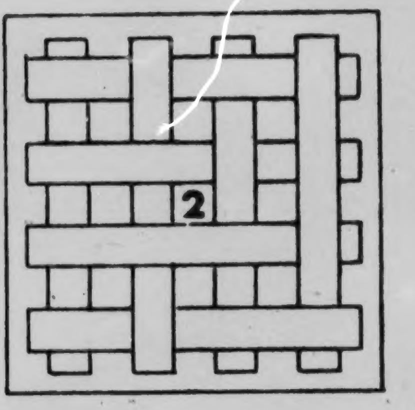
Try writing your own story or message using a similar code.

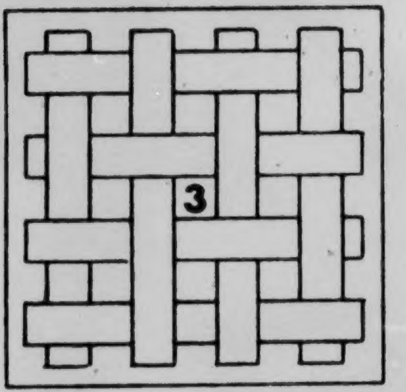
TRELLIS TWISTER

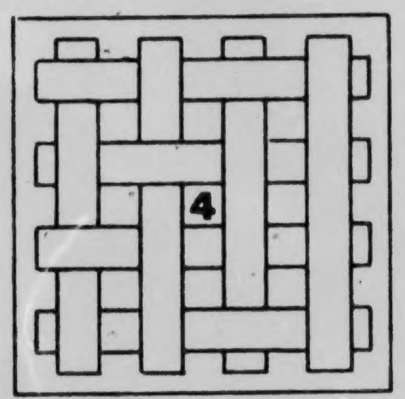
The trellis in the left-hand corner is one of the other eight as seen from the back. Which one?

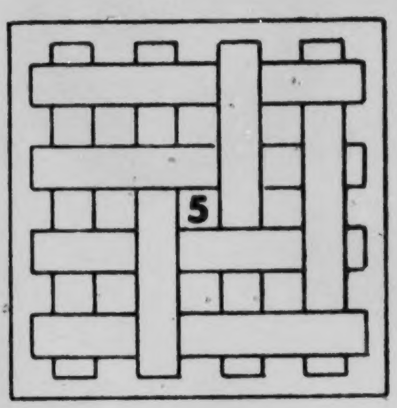


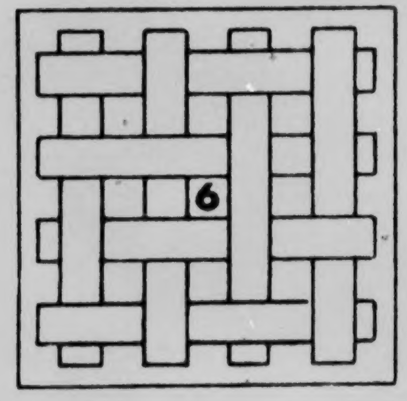


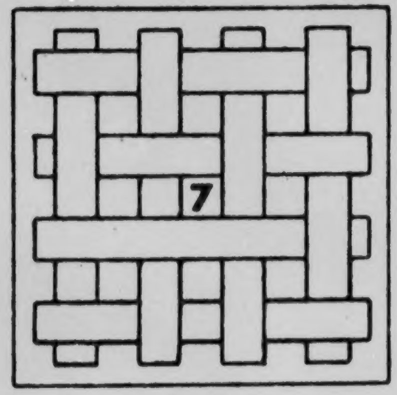


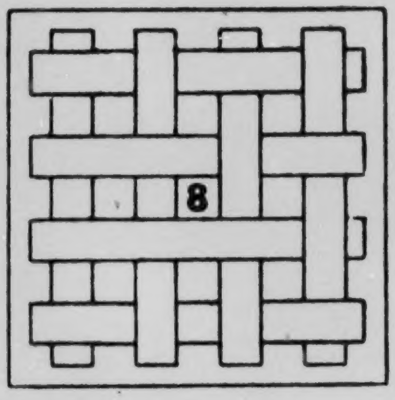












From *Aftermath*, Book 2, Page 6. Published by Creative Publications Inc. Palo Alto, California.

ATTRIBUTES

Purpose of Lesson

The students will be able to discover similarities and differences among attribute cards.

Materials Needed

Attribute cards. (See following pages.) These designs may be cut out and pasted on cards or the teacher may make a set of cards by drawing similiar lines on 3" x 5" cards with a felt pen.

Attributes for Attribute Cards

-Wide and thin lines
-Broken and continuous
-Curved and straight, irregular
-Double and single lines
-Horizontal and vertical

Activities

Discuss the meaning of attributes. Teacher decides on a certain attribute or combination of attributes. Teacher shows cards one at a time, rejecting or accepting each. Students evaluate cards teacher has accepted and determine the attributes.

Variations

The attribute cards could be paired and copied on rectangles of chipboard to make a set of attribute dominoes.

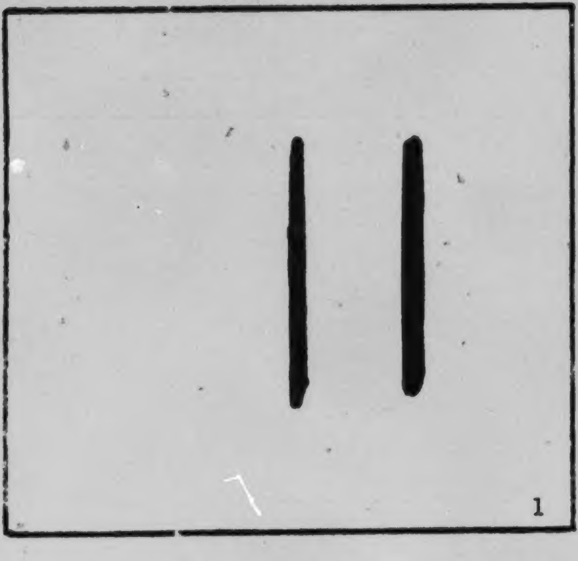
Rules for Attribute Dominoes

Each player draws 10 dominoes. The object is to form the longest possible chain according to some rule of matching. Rules for matching:

1. Dominoes must have ends that match exactly.
2. Ends match except for color.
3. Ends match except for shape.
4. Ends match except for size.
5. Ends match in color only.
6. Ends match in shape only.
7. Ends match in size only.
8. Ends have exactly one difference.
9. Ends have exactly two differences.
10. Ends have three differences.

Note to teacher

There are many good commercially prepared attribute blocks, cards, and dominoes available in educational supply stores.



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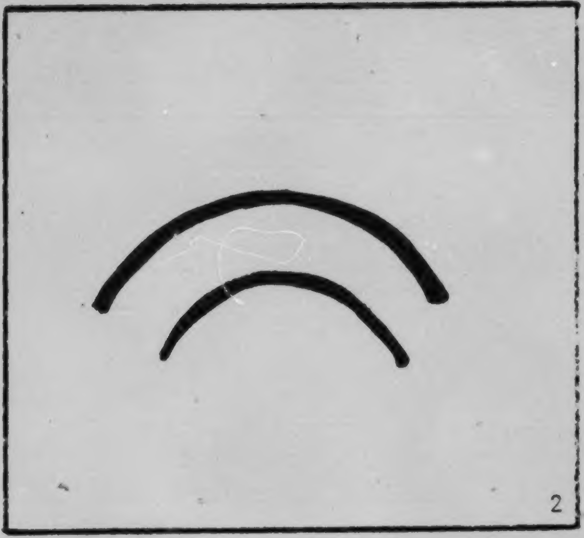

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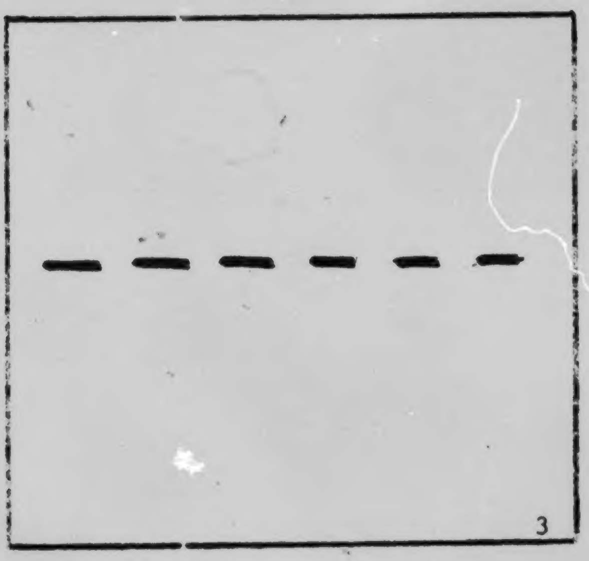

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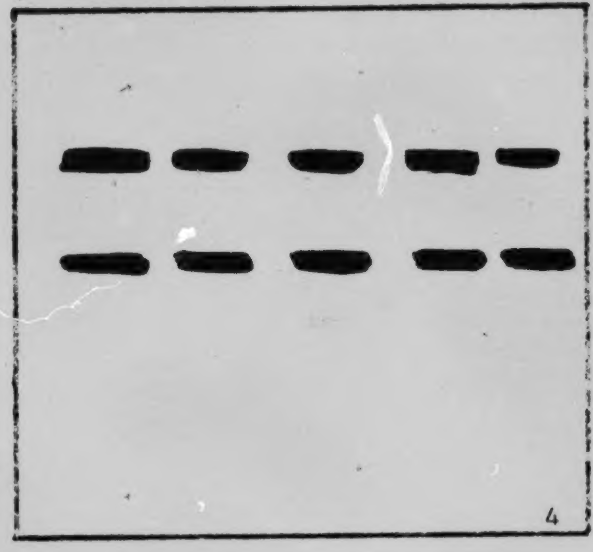

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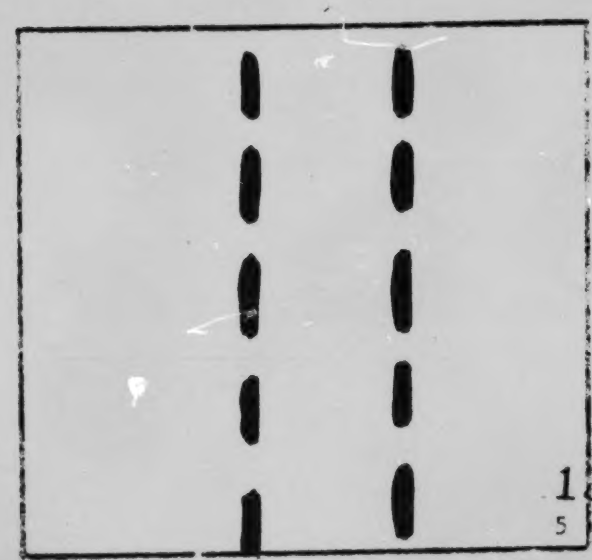

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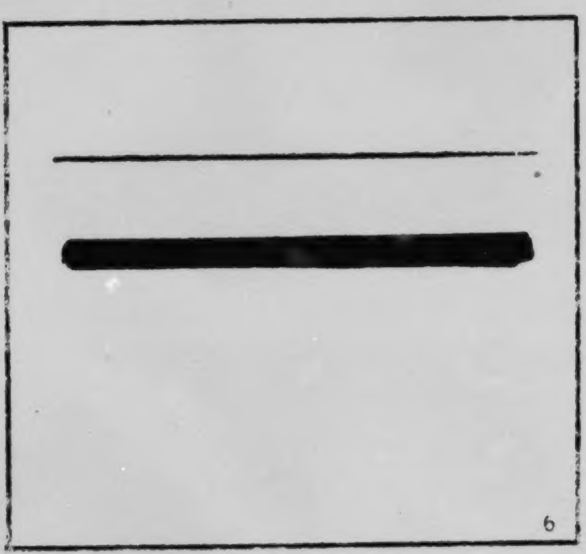

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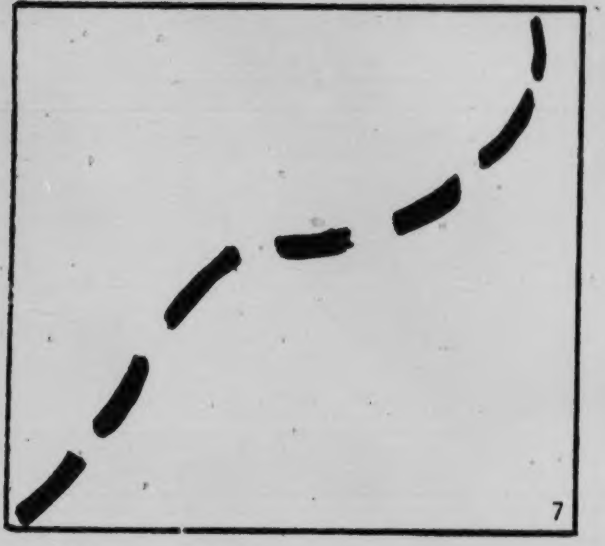
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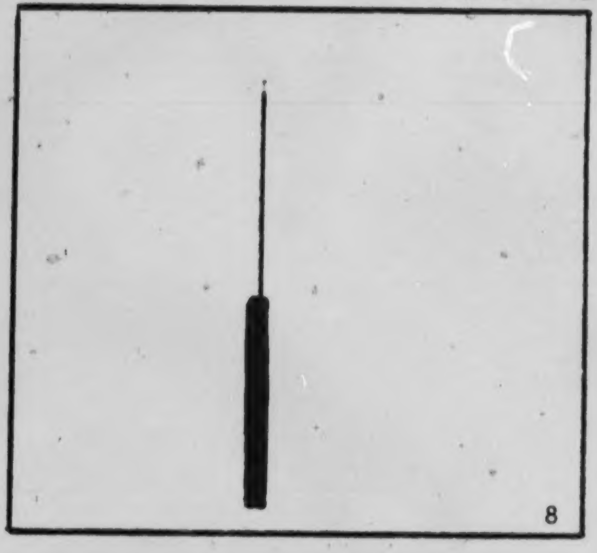
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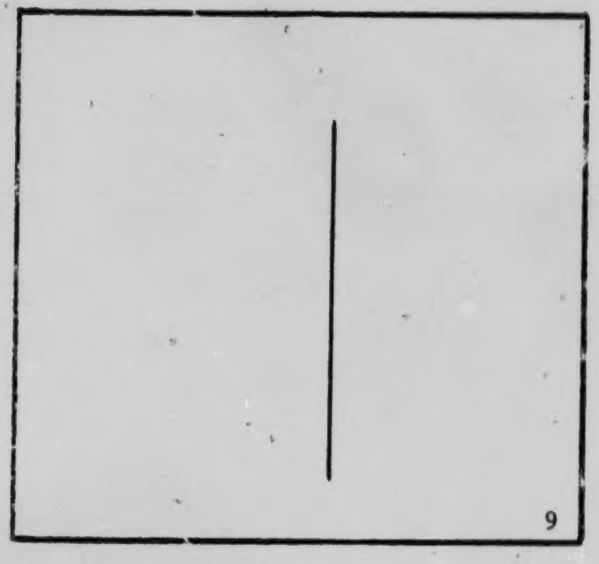
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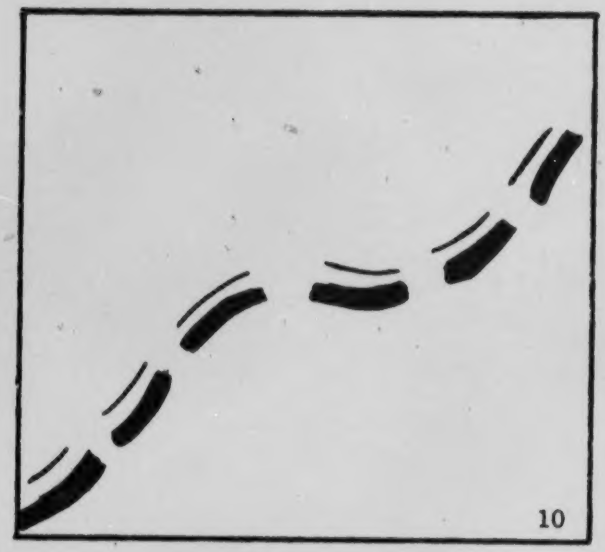
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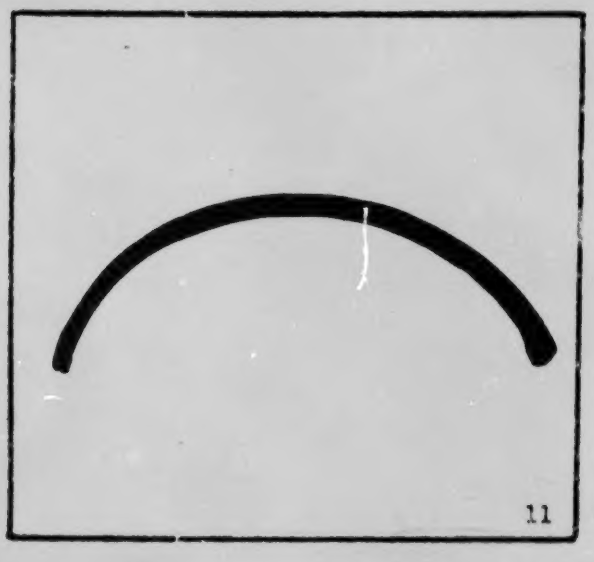
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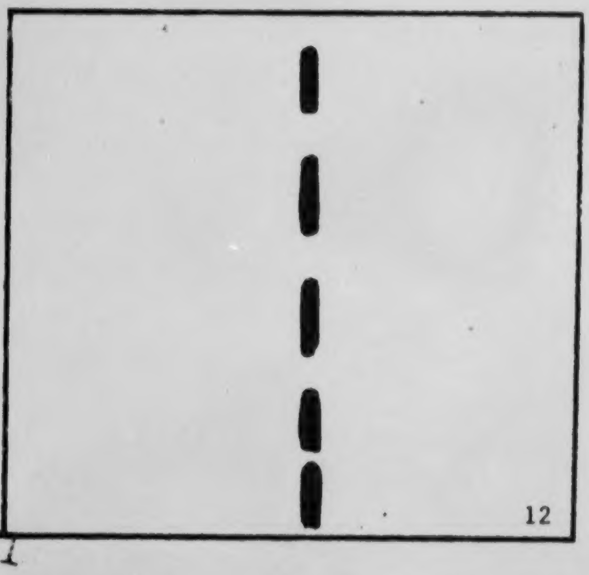
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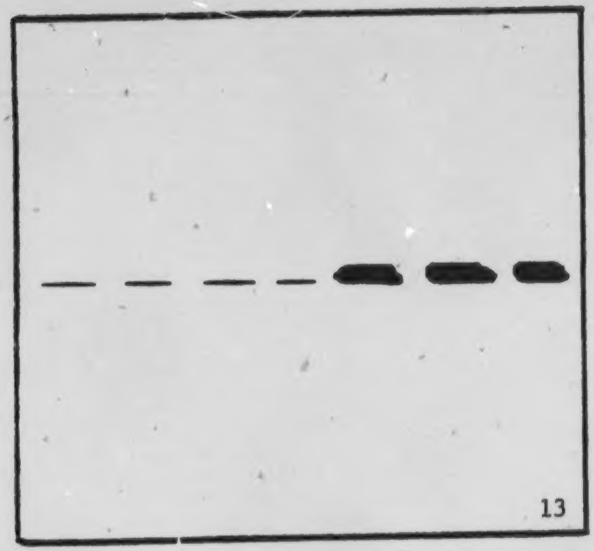
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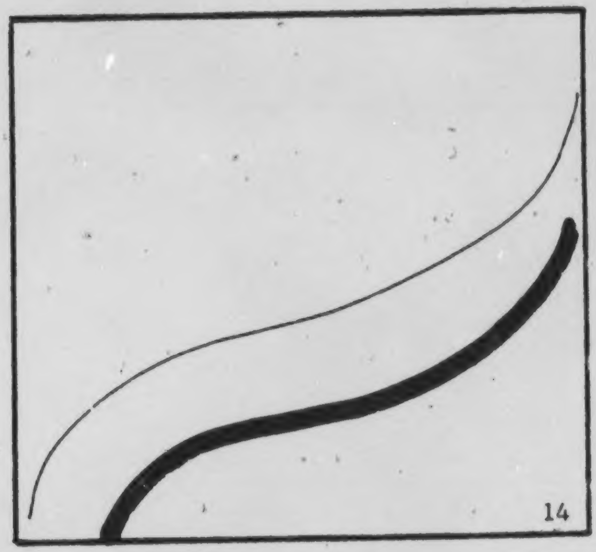
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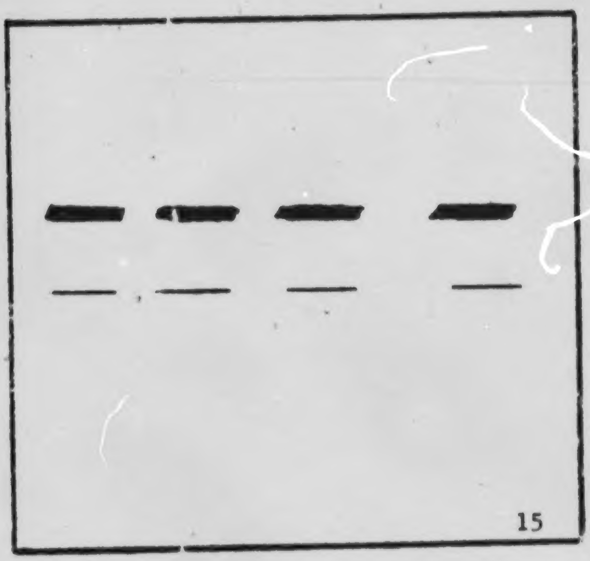
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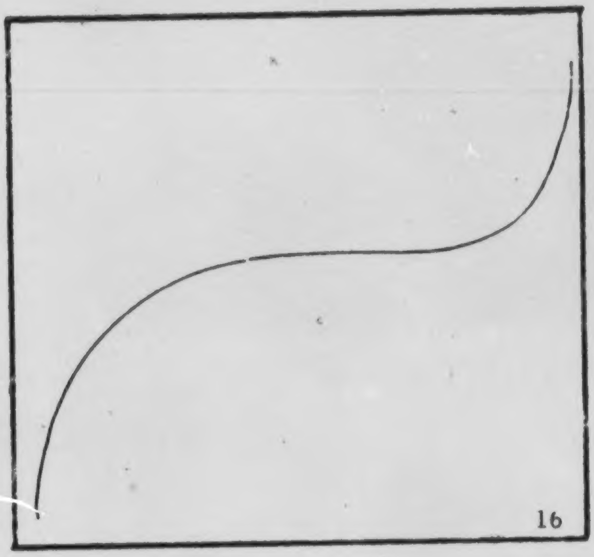
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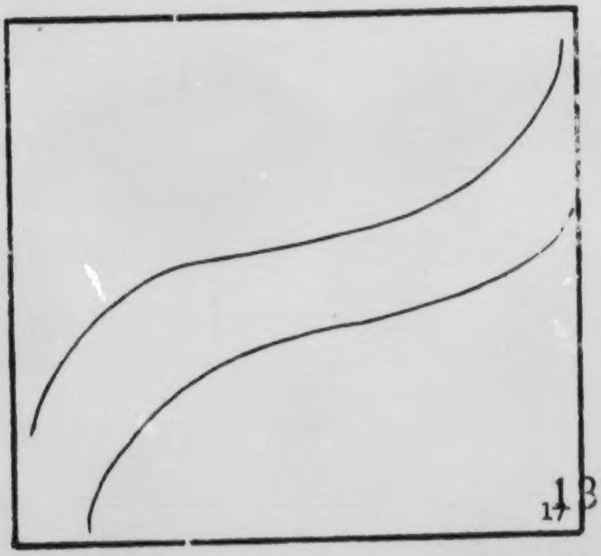
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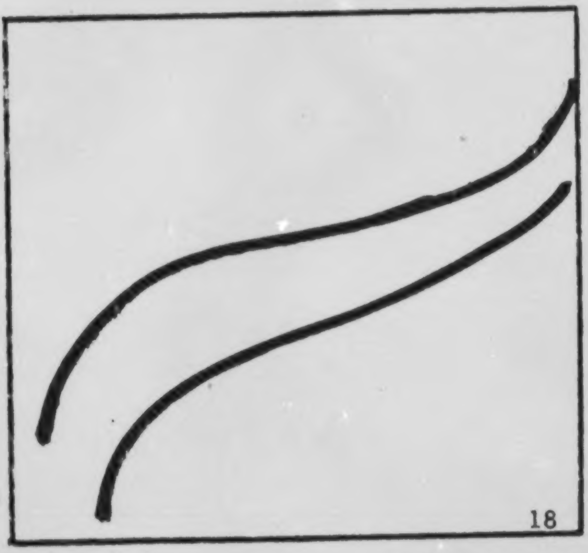
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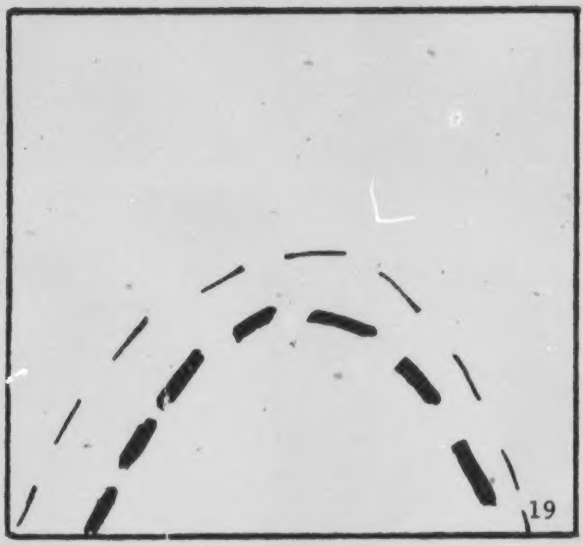
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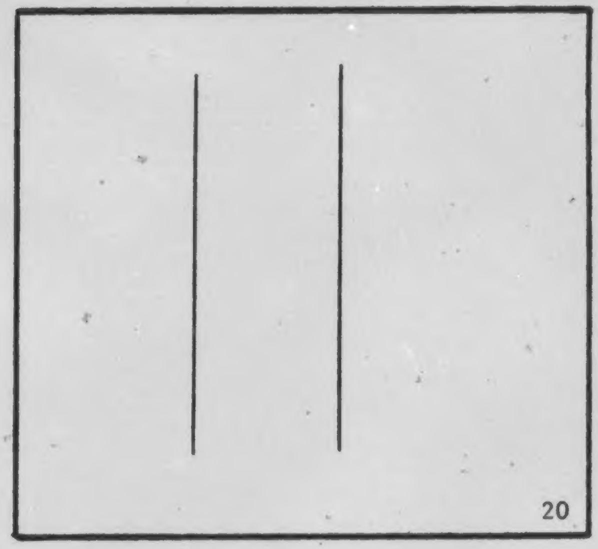
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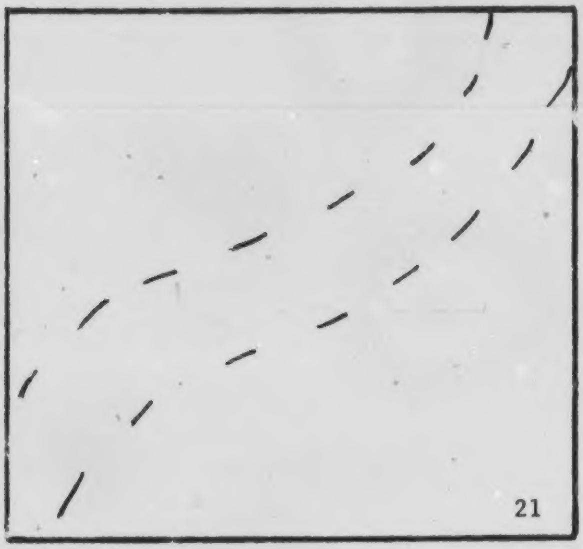
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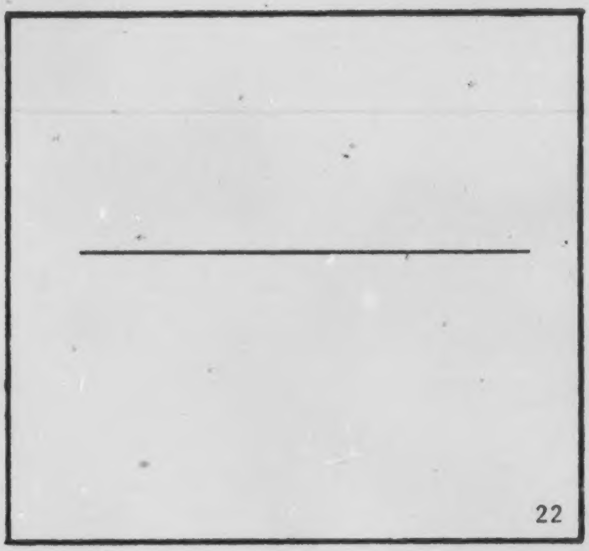
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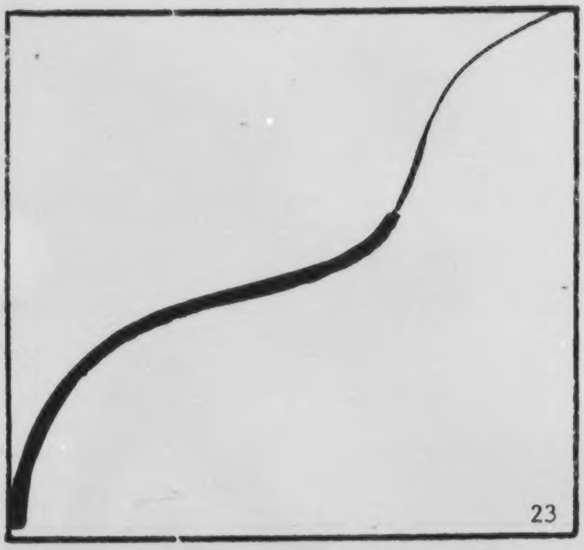
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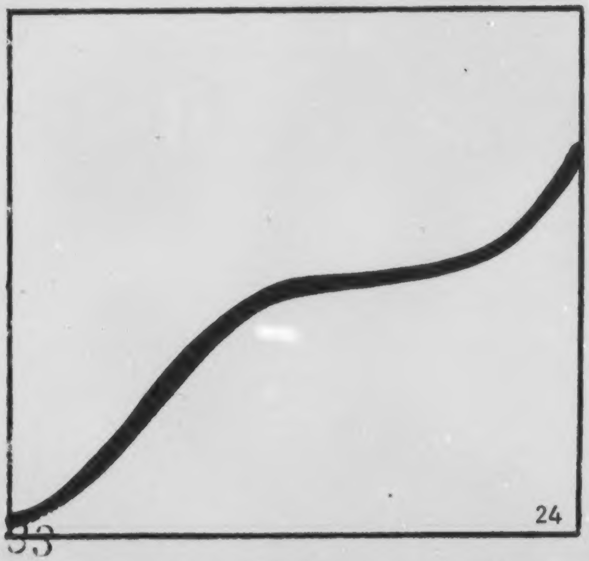
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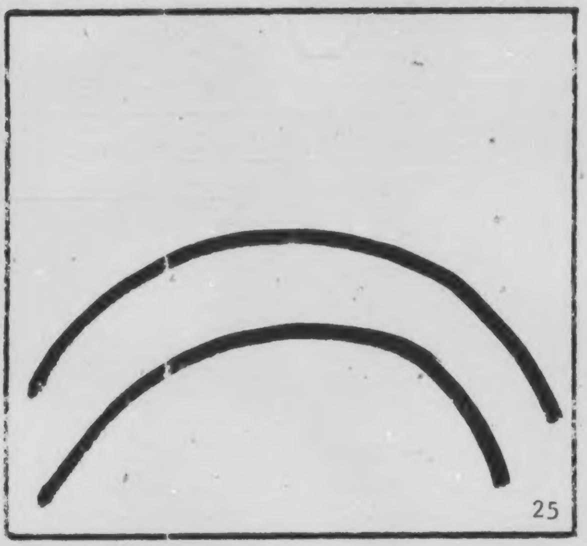
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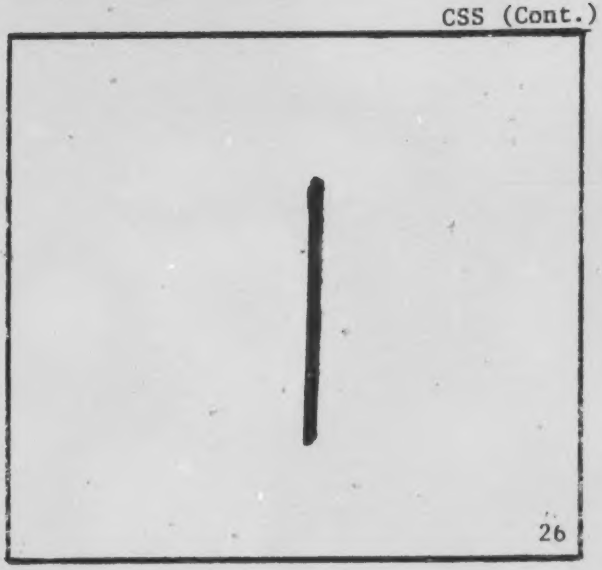
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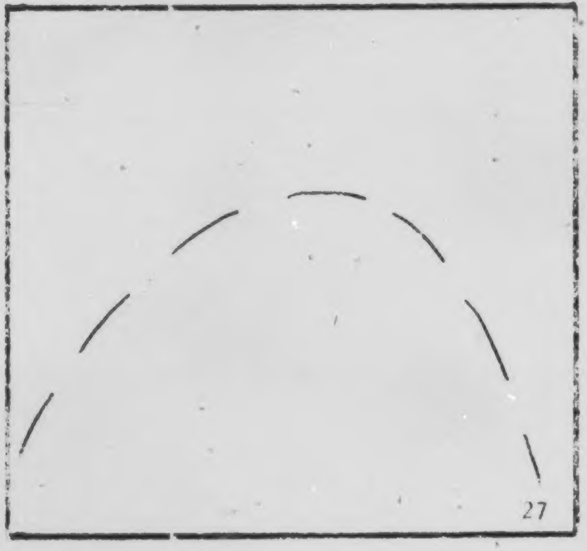
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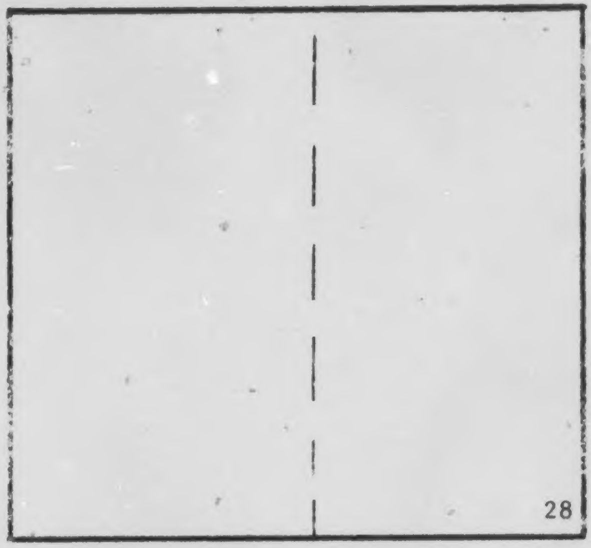
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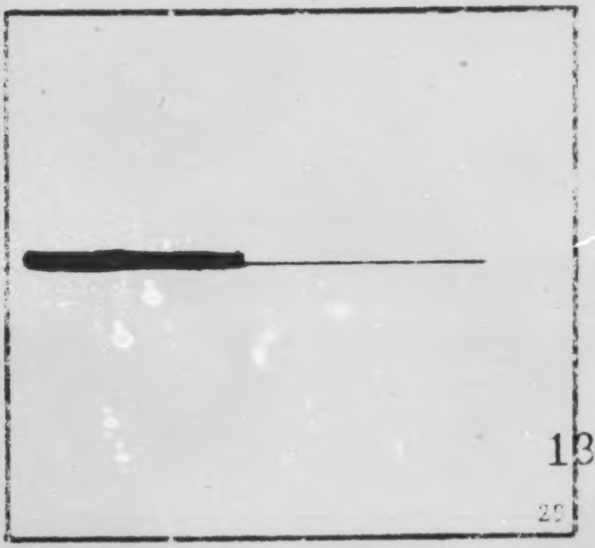
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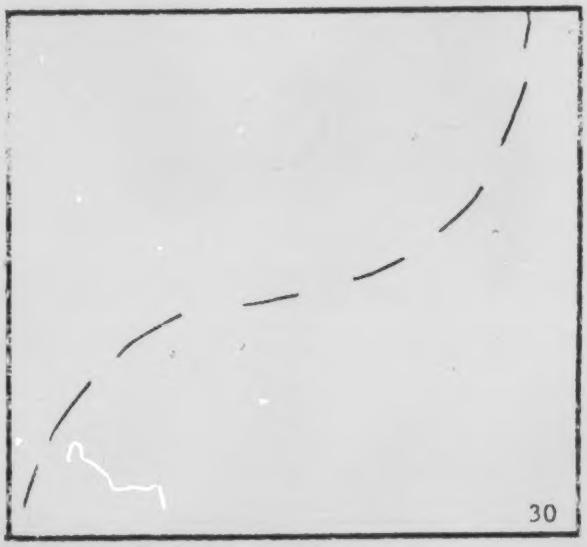
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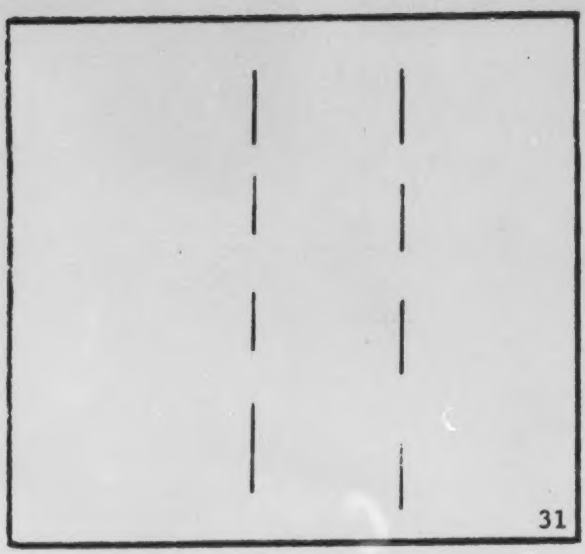

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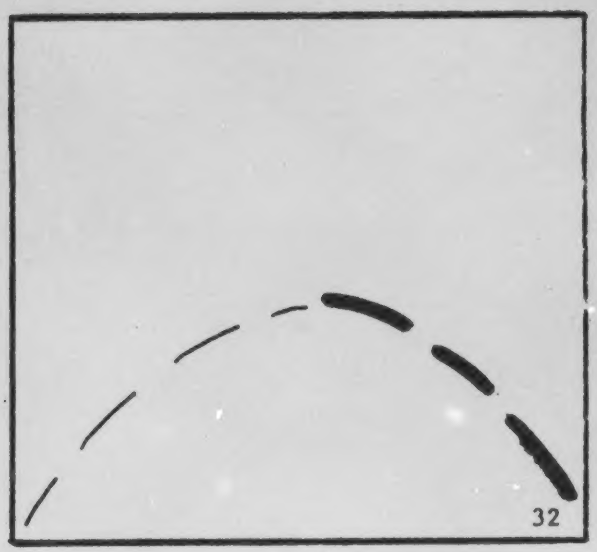

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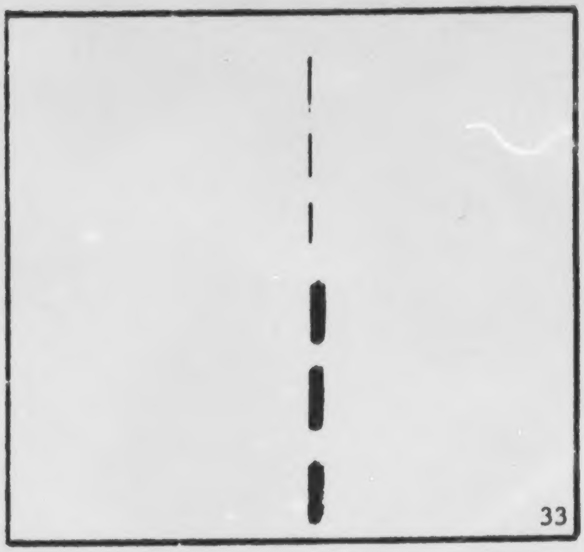

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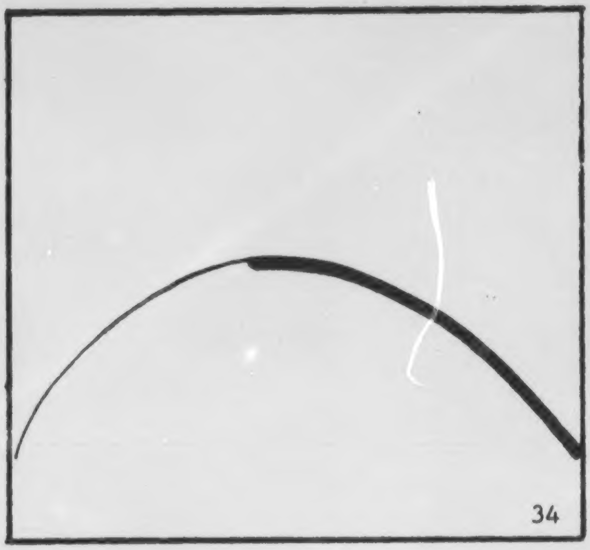

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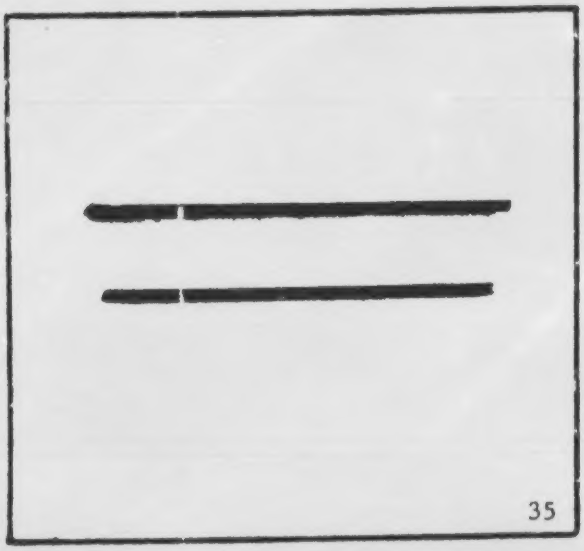

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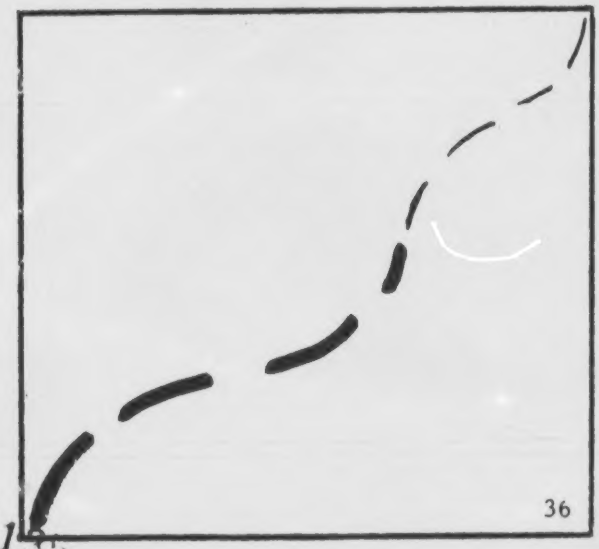

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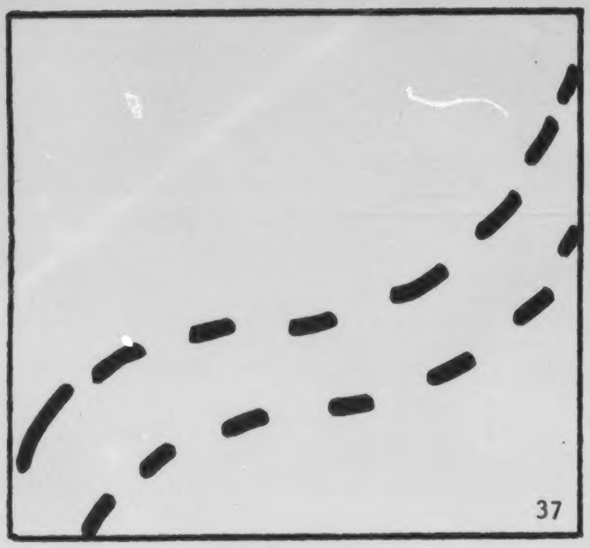

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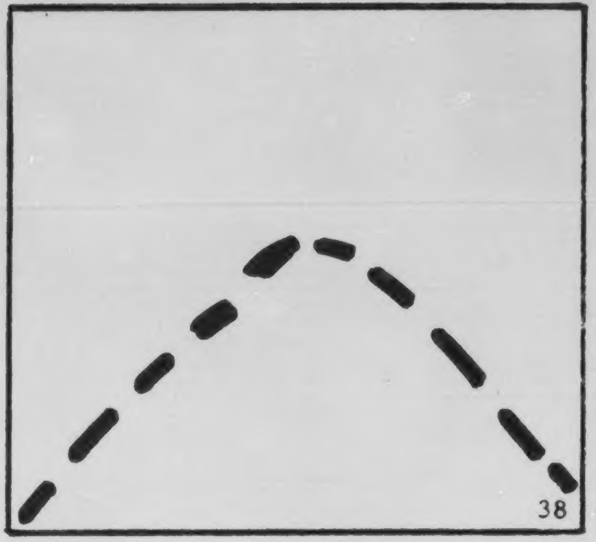

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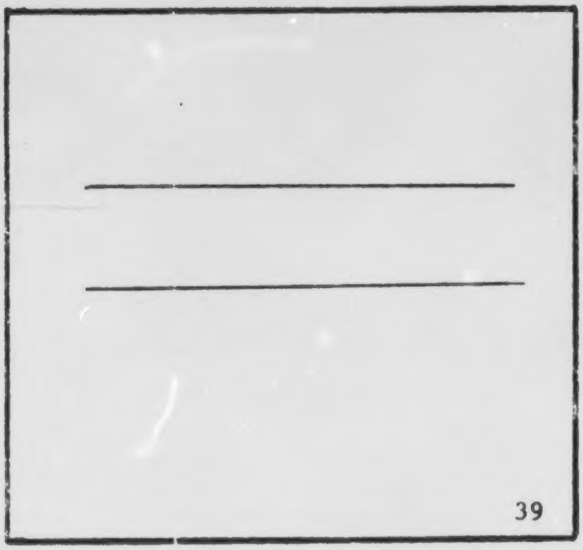

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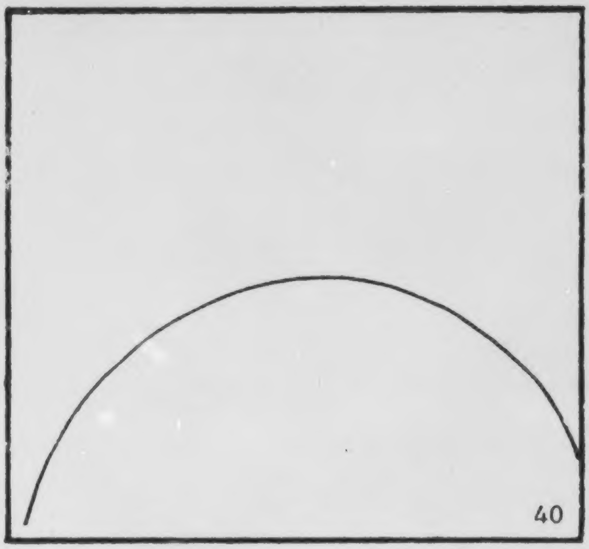

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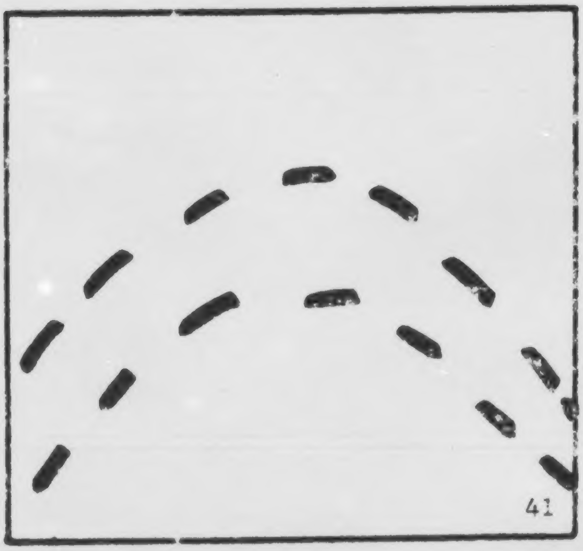

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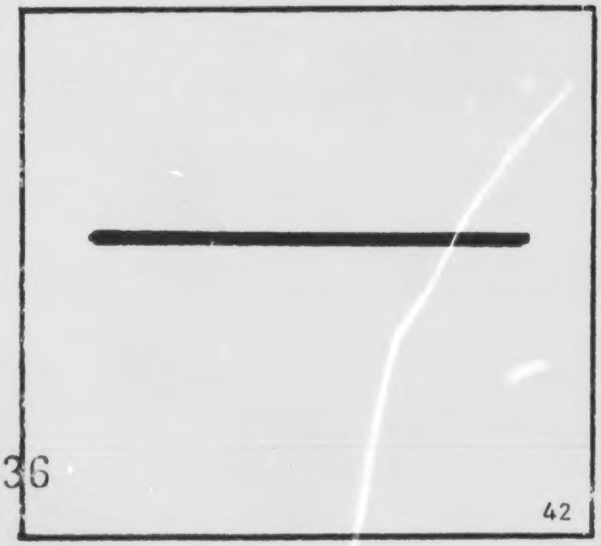

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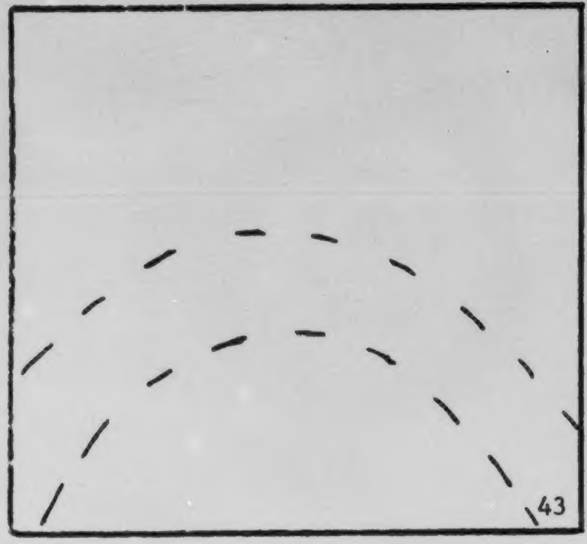
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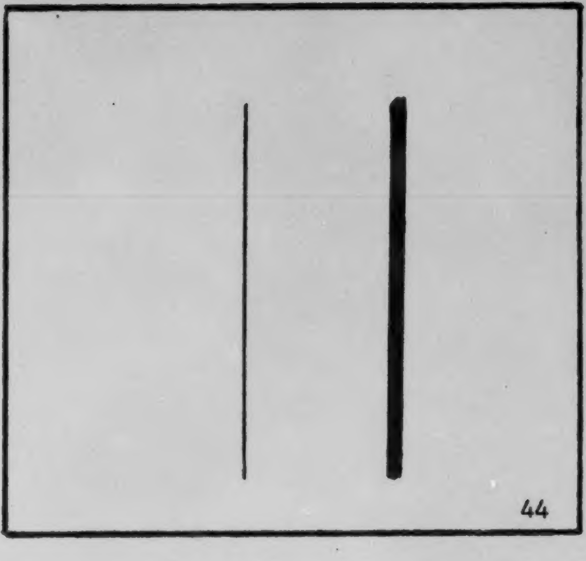
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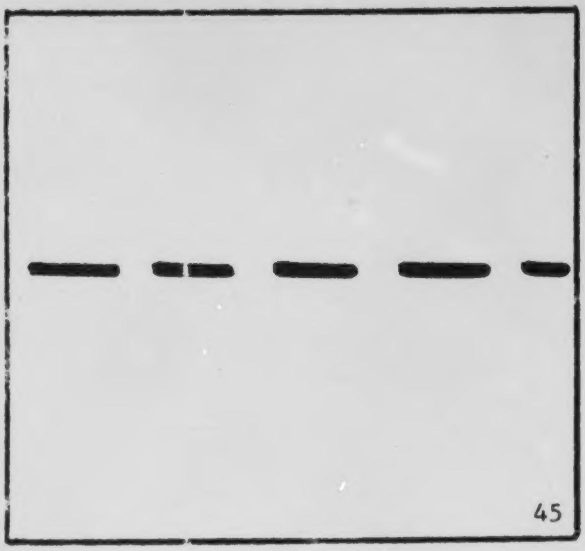
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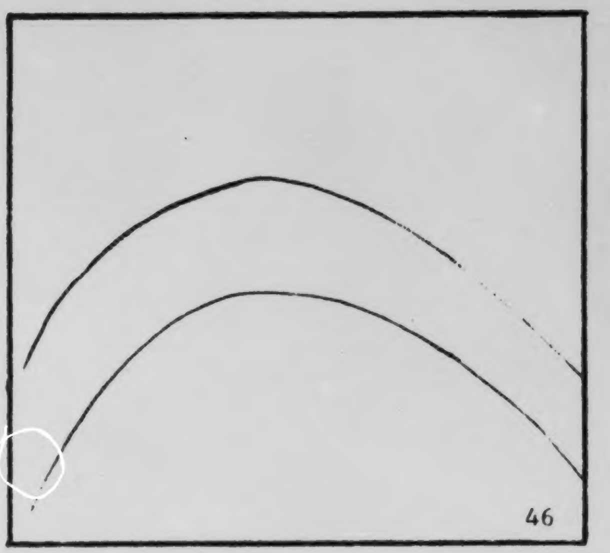
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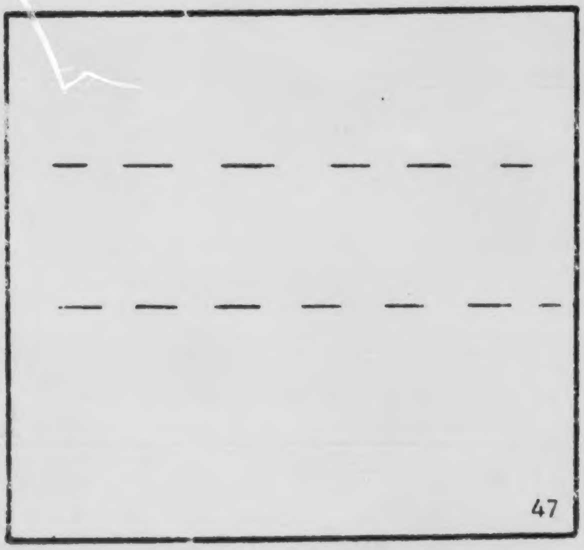
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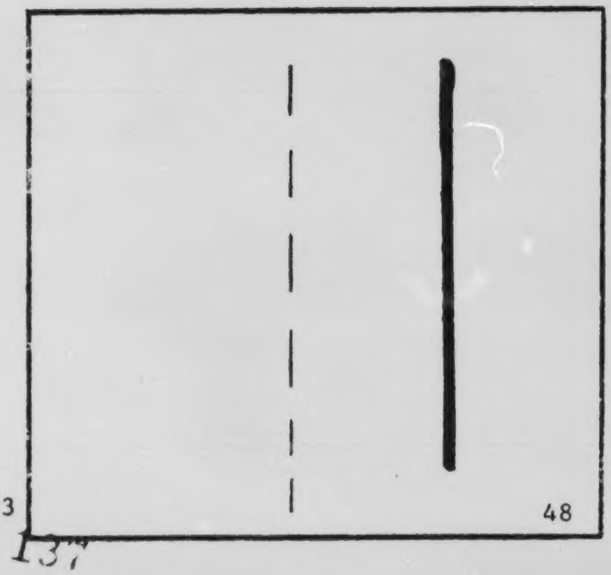
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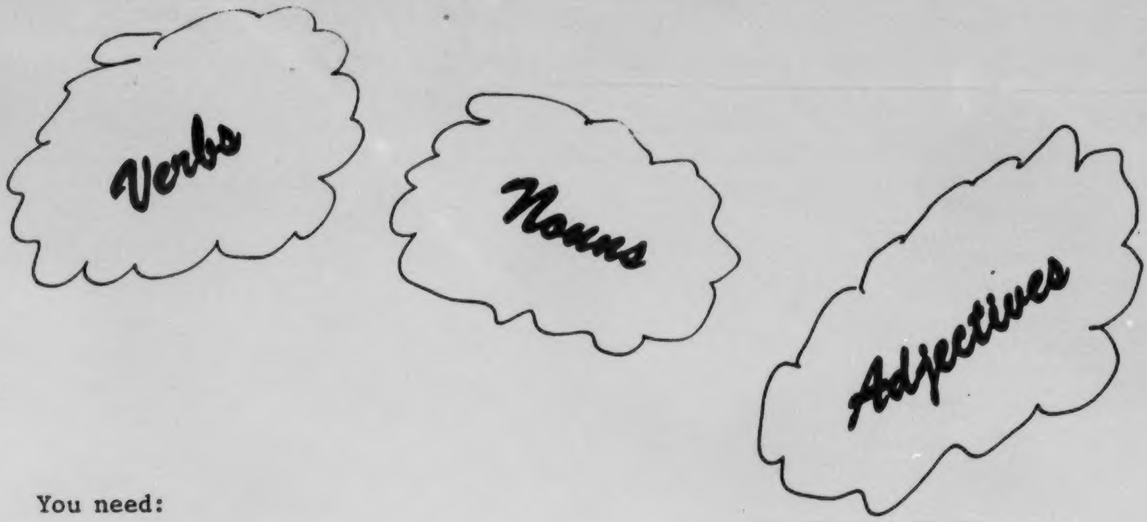
Find at least 36 words

O	P	A	S	A
M	I	N	U	L
W	L	E	O	T

WORD COLLAGE



You need:

Magazines
Scissors
Paste
Large sheet of poster or construction paper

Select a category of words, for example, *nouns*, *adjectives*, or *verbs*.

Search through the magazines and find examples of your words, the more colorful, the better! Advertisements and titles are especially good sources of large, colorful words.

Cut out words.

Arrange artistically and paste them on the poster paper.

ORAL COMMUNICATION

Objective

The student will use descriptive words orally to communicate directions to other students for drawing a given shape.

Materials Needed

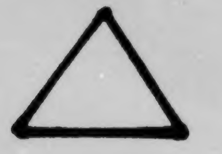
5" x 8" cards with pictures or geometric shapes drawn on them. (See next page.)
Paper and pencils

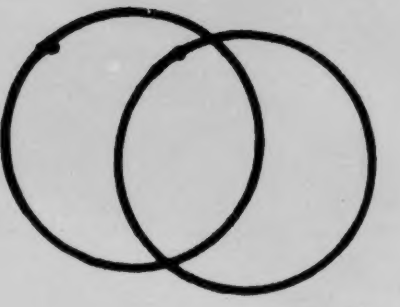
Activity

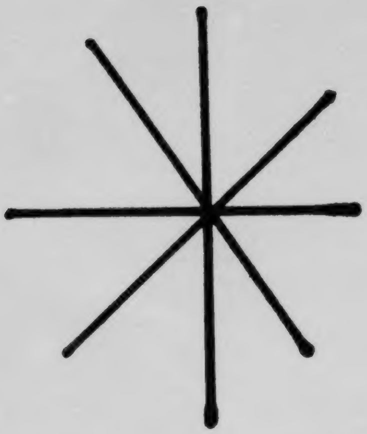
1. Discuss how to give directions well so that others understand.
2. Discuss organization of thoughts and how to develop a sequence to the directions.
3. Divide the class into groups of five.
4. Each child in the group will have an opportunity to give directions to the other children in that group.
5. The child who will be giving directions receives a 5" x 8" card with a picture or geometric shape drawn on it. (See next page.) Without showing the rest of the group the student will use only words to explain how to draw the shape. S/He may use only words telling the types of lines to use, the direction the lines are to go, the length of the lines, and the distance between them.
6. The other members of the group draw exactly what they are told. No questions may be asked of the direction-giver.
7. At the end of the instructions, the group compares drawings to the original.
8. Another student then gives directions from another card until each child has a turn.
9. Discuss the problems in communicating effectively and how to remedy the problems.

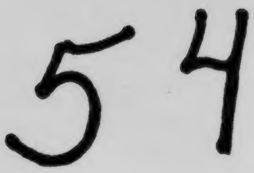
SUGGESTED FORMS FOR CARDS

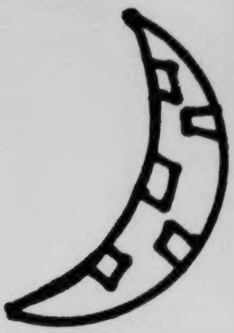
These forms can be cut apart and pasted on cards.

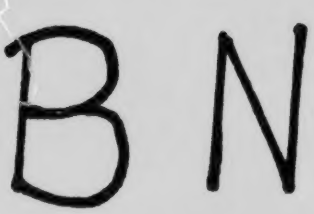


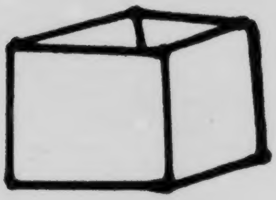


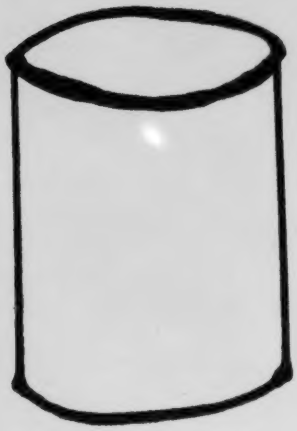


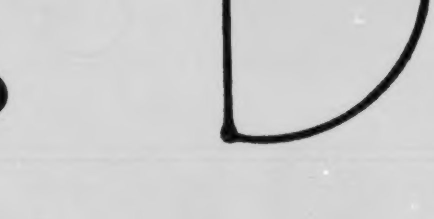


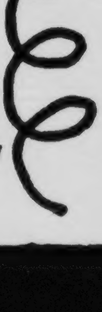


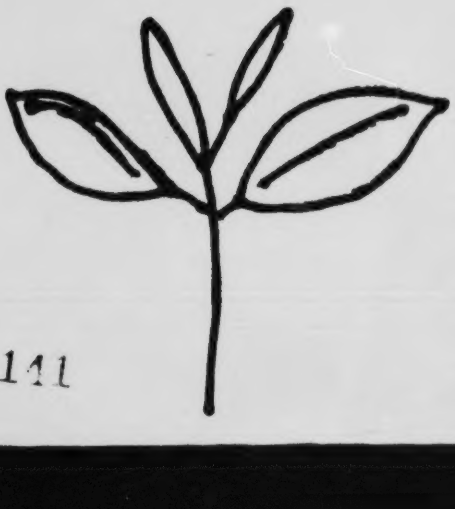






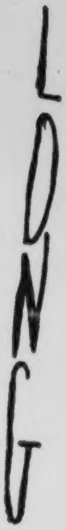


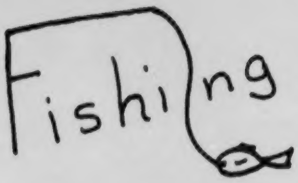


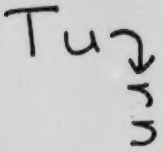


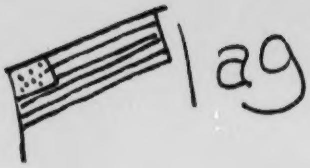
WORD ATTRIBUTES

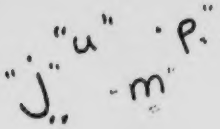
Choose a word. Think of the attributes of that word. Draw those attributes into the word.

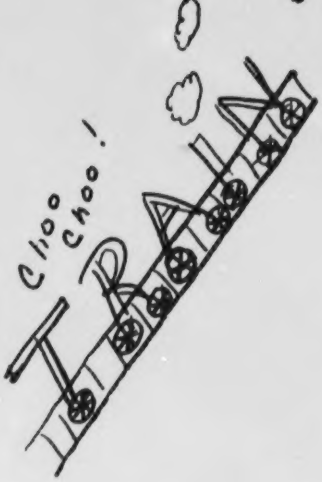


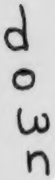


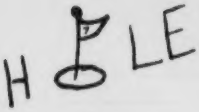


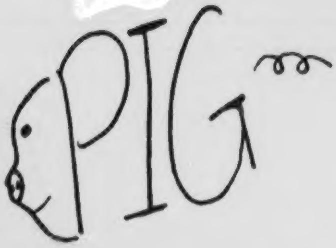


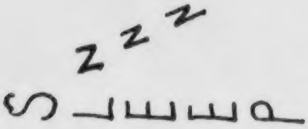



Choo Choo!
TRAIN









MOUNTAINS OUT OF MOLEHILLS

Here are eight simple sayings translated into complicated language. Match them with the original proverbs on the right.

1. A superabundance of talent skilled in the preparation of gastronomic concoctions will impair the quality of a certain potable solution made by immersing a gallinaceous bird in ebullient Adam's ale.
2. Individuals who perforce are constrained to be domiciled in vitreous structures of patent fragility should on no account employ petrous formations as projectiles.
3. That prudent avis which matutinally deserts the cosiness of its abode will ensnare a vermiculate creature.
4. Everything that coruscates with effulgence is not aurous.
5. Do not dissipate your competence by hebetudinous prodigality lest you subsequently lament an exiguous inadequacy.
6. An addlepated bonehead and his specie devaricate with startling prematurity.
7. It can be no other than a maleficent horizontally propelled current of gaseous matter whose portentous advent is not the harbinger of a modicum of beneficence.
8. One should hyperaesthetically exercise macroscopy upon that situs which one will eventually tenant if one propels oneself into the troposphere.

a. The early bird catches the worm.

b. A fool and his money are soon parted.

c. Waste not, want not.

d. Too many cooks spoil the broth.

e. Look before you leap.

f. All that glitters is not gold.

g. People who live in glass houses shouldn't throw stones.

h. It's an ill wind that blows nobody any good.

Discuss: After trying this semantic exercise what conclusions have you reached about the use of words and communication?

Try writing some of your own proverbs or fairy tales using big words. You will need a good dictionary!

ANSWERS

CFU-1 CHECK YOUR PERCEPTION

1. The ability to see one pattern within another is necessary to develop original designs and to observe things closely. You should see the basic pattern in numbers 2 and 4. (If a child can explain and diagram number so it fits correctly, give him/her credit.)

2. Perception is an active, pattern-seeking process and is important to the act of thinking. Just as you tried to find a pattern in number 1, here you get "closure." You may be able to supply the missing detail in your mind due to having seen these objects in the past. Your mind completed the closure of an incomplete figure.

   Answers: house, violin, tape dispenser, book, camel.

3. The correct answers are: C, D, B

   If you could match these correctly, you looked for patterns. If you can do these quickly you have seen the pattern as a whole.

   The long way involves detailed comparison and perhaps talking to yourself. The computer uses this method and is a slow visual thinker. A computer takes great effort to perform operations that humans can perform effortlessly.

4. This operation is more difficult because it establishes categories for separating items. A computer must be programmed to gain the ability to classify, but this is a routine matter for the human mind. How easy was it for you?

   Answers: a and e, a and e, c and f

5. Activities involving drawing shows how actively you seek patterns. To draw the required image your mind and eyes have to work together to "see" it correctly.

6. Rotating objects in your mind is more difficult. You have to use imagination and base it on what you see.

7. A three-dimensional object is even harder. You have more areas to think about and consider.

   If you checked the first pair of dice, you rotated the dice correctly.

8. You had to move a piece of string in space in your mind. This is very difficult and requires you to form the image in your mind.

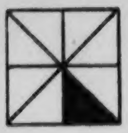
   Answer: The knots are B, C, E

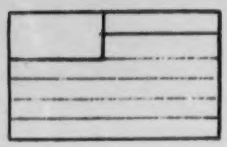
9. Logical reasoning can use visual thinking as much as verbal or mathematical thinking. Putting objects together from an idea presented is used by the artist and inventors to create new ideas.

   To answer correctly, you should have: D and C

10. Picturing images can become more complicated as in this activity. Based on a pattern of what you have seen, you are asked to visualize what would come next.

The answers are: 1,



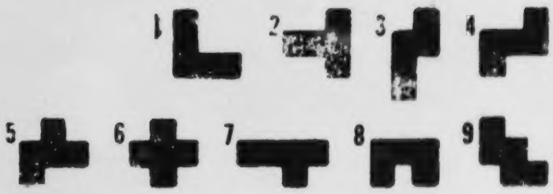


11. The ability to remember what you have seen is hard to measure. A poor memory may be the result of inaccurate perception. In fact, active perception and a faithful memory are closely tied together. The more actively you perceived these figures the better you remembered them.

CFS-3 MATCHING SHAPES

Row 1--A
Row 2--C
Row 3--C
Row 4--A
Row 5--B

CFS-4 MIRROR IMAGES



CFS-7 PUZZLE PIECES

Row 1--B and D
Row 2--A and C
Row 3--A and E or B and C
Row 4--C and E
Row 5--B and D
Row 6--A and E
Row 7--A and C

CSS	ATTRIBUTES
1.	Wide, double, vertical
2.	Wide, thin, curved, double
3.	Broken, straight, thin, single horizontal
4.	Broken, straight, double, wide, horizontal
5.	Double, wide, vertical, broken
6.	Thin, wide, double, horizontal continuous
7.	Wide, broken, irregular, single
8.	Single, thin, wide, vertical continuous
9.	Thin, vertical, continuous, single
10.	Irregular, thin, wide, double broken
11.	Curved, wide, single
12.	Vertical, single broken, wide, straight
13.	Thin, wide, horizontal, broken, single straight
14.	Thin, wide, irregular, double, continuous
15.	Double, wide, thin, horizontal straight, broken
16.	Irregular, thin, single, continuous
17.	Double, thin, irregular continuous
18.	Double, wide, irregular, continuous
19.	Thin, wide, double, broken, curved
20.	Thin, straight, vertical, double, continuous
21.	Broken, double, thin, irregular
22.	Thin, horizontal, straight, single, continuous
23.	Wide, thin, single, irregular, continuous
24.	Wide, single, irregular, continuous
25.	Curved, double, wide, continuous
26.	Wide, single, vertical, straight, continuous
27.	Curved, thin, single, broken
28.	Thin, broken, vertical, straight, single
29.	Wide, thin, continuous, straight, single, horizontal
30.	Broken, irregular, thin, single
31.	Vertical, double, thin, broken straight
32.	Broken, curved, single, wide, thin
33.	Straight, vertical, wide, thin, broken, single
34.	Curved, single, wide, thin, continuous
35.	Double, continuous, wide straight, horizontal
36.	Broken, irregular, single, wide, thin
37.	Broken, wide, irregular, double
38.	Broken, wide, curved, single
39.	Double, thin, continuous, straight horizontal
40.	Single, curved, thin, continuous
41.	Broken, double, curved wide
42.	Wide, single, continuous, straight, horizontal
43.	Broken, double, thin, curved
44.	Wide, thin, vertical, straight, continuous, double
45.	Broken, vertical, single, straight, horizontal
46.	Curved, double, thin, continuous
47.	Double, broken, thin, straight horizontal
48.	Double, wide, thin vertical, straight, broken

CSR-1 BREAK THE CODE

1--p
2--r
3--a
4--c
5--t
6--i
7--l

CMT-2 MOUNTAINS OUT OF MOLEHILLS

1--d
2--g
3--a
4--f
5--c
6--b
7--h
8--e

COGNITION TASK CARDS

Task cards created for use with the cognition factor are presented on the following pages. Answers for two of the puzzles are presented at the end of the section.

The task cards have also been printed on a heavier stock and sets (Stock No. 41-S-9941) may be ordered through the Office of Materials Development, telephone 293-8140.

COGNITION WALK*

Leave the confines of the classroom to take a cognition walk. Keep your senses alert and be keen observers. Maybe you can arrange to go in small groups. Discuss and name all the things you see and hear, as well as what you can touch, taste, or smell.

When you return to the classroom you may want to discuss, write about, or draw pictures of your walk.

*A good activity to introduce and discuss the concept of cognition.

C
Task Card 2

ALPHABET SOUP

Materials Needed

Alphabet macaroni (at least 1 teaspoon per student)
Toothpicks (optional, helpful for separating the letters)

Activity

Students are given one teaspoonful of alphabet macaroni. They are given a time limit (5-15 minutes) to make as many words as they can from the macaroni.

Variations

"Begging time" can be called by the teacher for five minutes, and students can ask others for letters they need. "Begging time" is ended by the teacher. Students have five more minutes to finish their lists of words. Point values can be assigned for three-letter words, four-letter words, and so on. The students total their accumulated points to determine a winner.

Students may practice making words from macaroni as an independent activity.

Play the game again but place the words in a crossword puzzle form.

Student can use macaroni letters to "write" original poems on wooden plaques or on cardboard. (Letters are glued on, then covered with shellac or varnish.)

(This activity is coded CSU.)

C
Task Card 3

FOR YOU TO TRY

Try one or more of the things below. Give a brief report to your class or teacher on how it came out. Feel free to suggest your own ideas to your teacher.

1. Take a walk and list at least 10 sounds, sights, or smells you never noticed before. On your way to school, try going a different way, or go the same way and try to find something you've never noticed before.

2. Ask your mother to let you prepare a new dish for supper--something no one in your family has tried before.

3. Get a committee to prepare a bulletin board on unusual ideas. (If you like to work alone, prepare a notebook instead.)

4. Tape record some unusual sounds. Ask your classmates to identify them. Or record common sounds and play them at different speeds.

5. Report to the class on a new idea you have found helpful at home or at school.

TRACE AND ERASE

The object of the game is for one player to "erase" all four words of his/her opponent, and then tell his/her opponent the words which he/she managed to "erase."

Two players may participate. Each player has a board on which are two squares with 100 boxes. The boxes are numbered on top from 1 to 10. The letters A-J run down between the two squares, one letter alongside each box. In this way you can designate the position of any box. For example if you call G-4, that means the seventh box down and the fourth box in.

When the game starts, each player has exactly the same diagram. S/He marks the left-hand square "My Chalkboard" and the other square "Opponent's Chalkboard."

Each player starts with a chalkboard on which s/he has placed four words in any place or any position, vertically, diagonally, or straight across. S/He must decide on one four-letter word, one three-letter word, and two two-letter words. The only two restrictions are that no word may touch another word. Each word must be separated by one blank box, and only one letter may appear for each box. (The example shows how you can position your words and also keep track of the boxes you called from your opponent's chalkboard.)

The players sit opposite each other with the stand in between them so that they cannot see each other's charts. Once the words are placed the game starts.

The idea of the game is to try to erase your opponent's chalkboard completely and guess the words s/he has used. If you call out a box on which your opponent's word is placed, you make an erasure. But one erasure is not enough to erase the whole word. You must hit every box on which that word is positioned.

The game starts with the first player calling out four different boxes. As s/he calls each one, s/he marks the call on her/his own "Opponent's Chalkboard." Looking at the example; the first player has called out I-3, D-4, E-5, and B-8. After s/he completes the full call, her/his opponent reports if any erasure has been made and if so what length of word s/he hit, and the name of the letter. For example, her/his opponent must report "no erasure" or "one erasure" on a four-letter word, and the letter is D.

The other player then gets a turn. S/He too records calls on her/his "Opponent's Chalkboard." The first player records all her/his opponent's erasures on her/his own chart and tells opponent what erasures have been made.

The example indicates that the second player has called A-3, B-3, C-3, and D-3 and has made an erasure on the first player's four-letter word.

Play proceeds in this manner with each player keeping a record of every call made by her/himself and opponent. In this way each player learns where opponents words are located.

After a player loses an entire word s/he is entitled then to only three calls on each turn thereafter. In the same way, any time a player loses a word her/his calls are reduced by one. When either player succeeds in erasing and guessing all four of her/his opponent's words, s/he wins the game.

	1	2	3	4	5	6	7	8	9	10
A			X						B	
B		C	X						E	
C			X							
D			X	R						
E					D					
F									O	
G								T		
H			T	W	O					
I										
J										

	1	2	3	4	5	6	7	8	9	10
A										
B								X		
C										
D				R						
E					D					
F										
G										
H										
I			X							
J										

C
Task Card 5

FINGER PRINTING

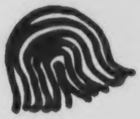
Materials Needed

Stamp pad
Copy of the finger printing card
Magnifying glass

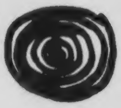
Directions

Fill out your own finger printing form. You might want to use your imagination in filling out parts of the form; for example, aliases. After your prints are made, classify your prints according to type.

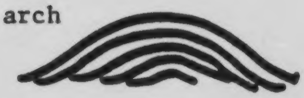
loop



whorl



arch



Additional Activities

If you can obtain some finger printing dust and a brush you might try to solve a pretend "WHODUNIT"!

After a group has completed finger print forms, put some prints on blank cards. Identify the prints by using the forms.

FINGER PRINTING FORM

LEAVE THIS SPACE BLANK

FBI No. | C.I.I. No.

LAST NAME | FIRST NAME | MIDDLE NAME

SEX

RACE

HT. (IN.) | WT.

DATE OF BIRTH

HAIR | EYES

SIGNATURE OF PERSON FINGERPRINTED

RESIDENCE OF PERSON FINGERPRINTED

OCCUPATION

SCARS AND MARKS | AMPUTATION

SIGNATURE OF OFFICIAL TAKING FINGERPRINTS | DATE

CONTRIBUTOR AND ADDRESS

POLICE DEPARTMENT
P. O. BOX 16[illegible]
SAN DIEGO, CALIF.

ALIASES

CONTRIBUTOR'S No

PLACE OF BIRTH

CITIZENSHIP

☐ CHECK IF NO RECORD IS DESIRED

LEAVE THIS SPACE BLANK

CLASS__________

REF.__________

1. RIGHT THUMB	2. RIGHT INDEX	3. RIGHT MIDDLE	4. RIGHT RING	5. RIGHT LITTLE
6. LEFT THUMB	7. LEFT INDEX	8. LEFT MIDDLE	9. LEFT RING	10. LEFT LITTLE

CLASSED BY

SEARCHED BY

CHECKED BY

LEFT FOUR FINGERS TAKEN SIMULTANEOUSLY

LEFT THUMB | RIGHT THUMB

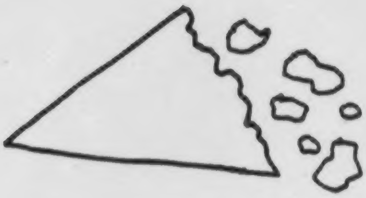
RIGHT FOUR FINGERS TAKEN SIMULTANEOUSLY

STATE BUREAU OF IDENTIFICATION
SACRAMENTO, CALIFORNIA

C
Task Card 6

SAY IT WITH

SYMBOLS



The signs along our highways give directions to drivers. A good symbol should enable the driver to recognize its meaning instantly. Design a symbol for each message below.

Bumpy Road

Narrow Bridge

Steep Hill

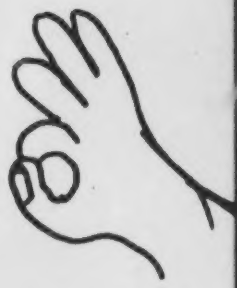
Animal Crossing

Slippery Road

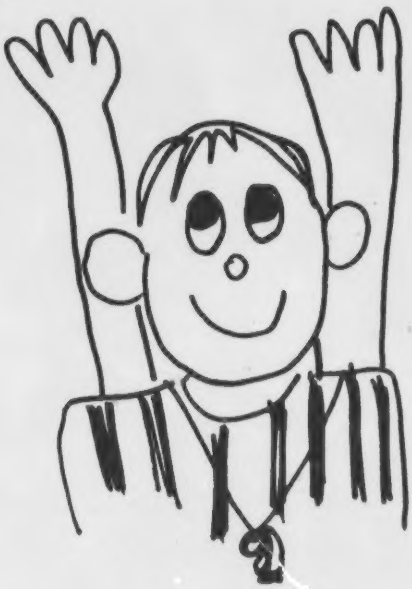
Railroad Crossing

HAND LANGUAGE

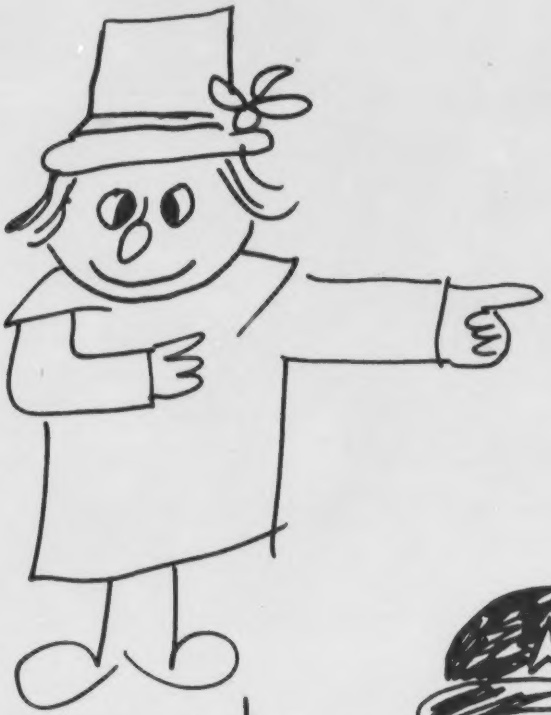
C
Task Card 7



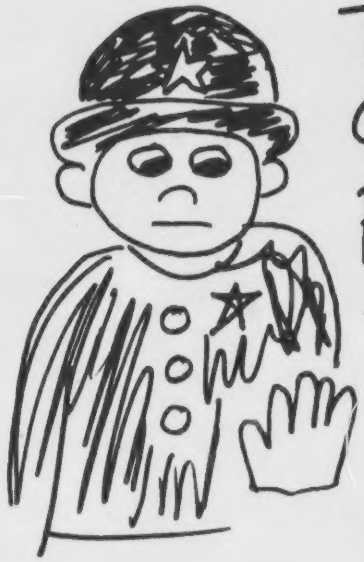
1. Select a category, e.g., football, traffic directions, air traffic controller, and so on.
2. Design different hand signals that would indicate a command, phrase, or saying within that category.



TOUCHDOWN!



He went that-a-way!



STOP!

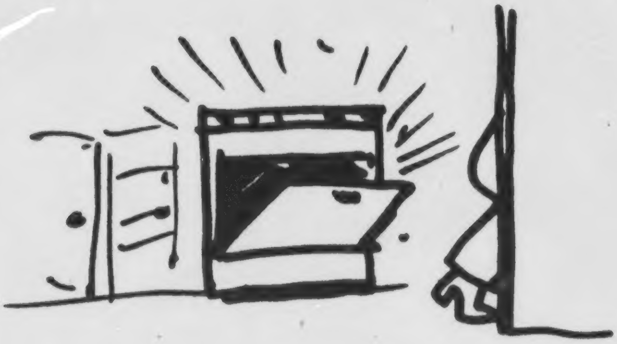
FAVORITE QUOTE

Materials Needed

A book of famous quotations
Poster paper
Crayons, colored pencils, felt pens, etc.

Activity

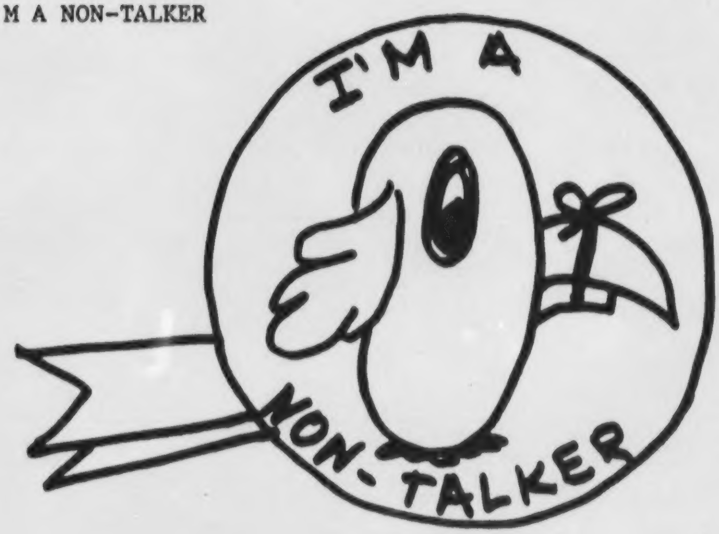
Choose a favorite famous quotation and make a poster which illustrates the quotation. Examples: "If you can't stand the heat, get out of the kitchen." Or "The buck stops here." (Harry Truman) Or other famous quotes.



C
Task Card 9

I'M A NON-TALKER

I'M A
NON TALKER


I'M A
NON-TALKER

Declare a "No Talking Day." Give each participant "The Great I'm a Non-Talker Memo Book." Players may communicate only by writing. Each non-talker will receive a set of small prizes: points, chips, and so on. If someone hears a player talking, he/she may take one of the talker's prizes! The game may be made more complicated by adding additional rules, e.g., if a spelling or punctuation error is found the player must forfeit another prize!

No talking at recess!

I'M A
NON-TALKER

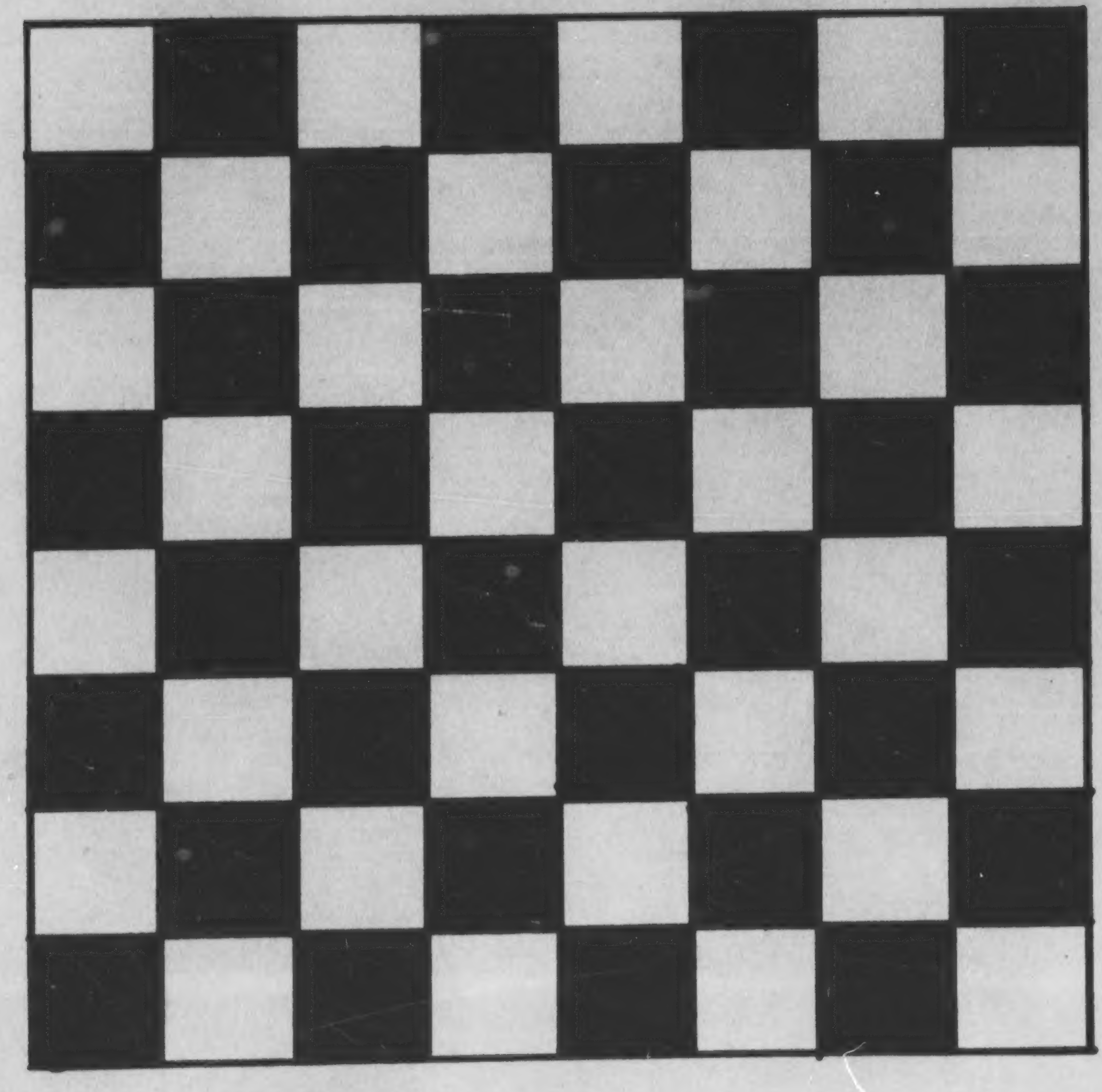
I'M A
NON-TALKER

C
Task Card 10

THE FLY'S TOUR

The student will need many dittoed copies of this chessboard, or cover it with acetate. It may take *many* attempts to solve this problem.

> A fly landed on the square in the top left hand corner of a chessboard and then proceeded to visit every white square. It did this without ever entering a black square or ever passing through the same intersection more than once. Can you show its route? It can be done in 17 continuous straight courses.



STICK TO IT!

BE PERSISTENT!

KEEP TRYING!

HANG IN THERE!

TOOTHPICK TEASER

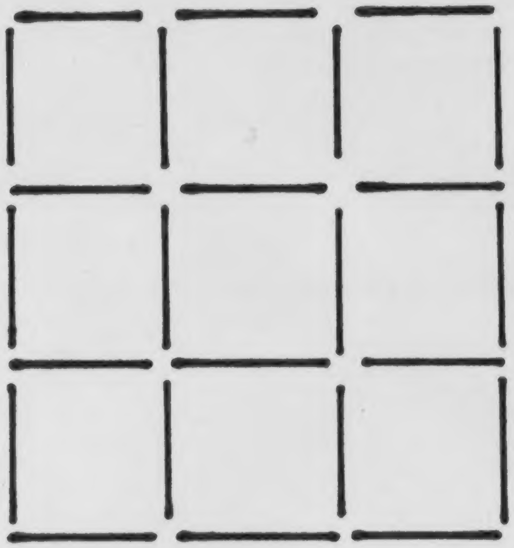
Material Needed

Toothpicks (24)

Directions

Arrange them in the position as shown. Remove 8 toothpicks to create two squares of unequal size.

(In this activity the process of actually manipulating the toothpicks until you perceive the solution is important.)



TOP SECRET! When you discover the solution, *do not tell.* Allow your classmates the thrill of discovering it themselves!

WHEN IS A HOUSE NOT A HOUSE?

Materials Needed

Paper
Crayons
A partner

Directions

In this activity you must depend *only* upon verbal communication!

Sit back-to-back with your partner. Each of you will need crayons and paper. Begin to draw a picture (or design). Describe it to your partner. With each additional item you add to your picture, continue to describe it to your partner. Your partner may ask questions about size, shape, and color, *but* only questions that can be answered "Yes" or "No."

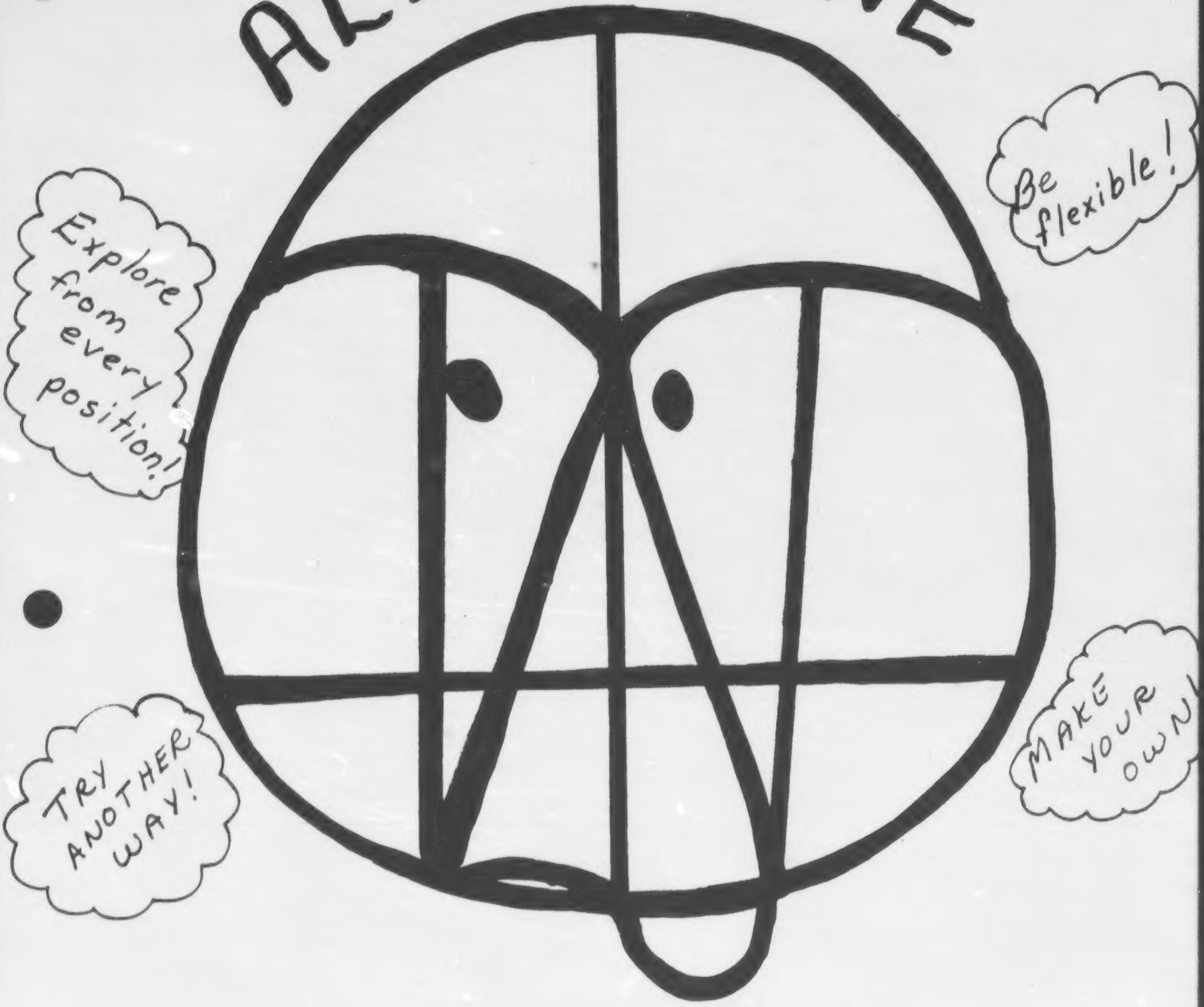
When you finish, compare. What features were communicated accurately? Were there some misunderstandings?

Discuss ways of describing features more precisely.

This activity could lead to a deeper discussion of problems in communication. Relate experiences when you were misunderstood or when you didn't understand someone. What was the cause of the problem? What did you do?

C
Task Card 13

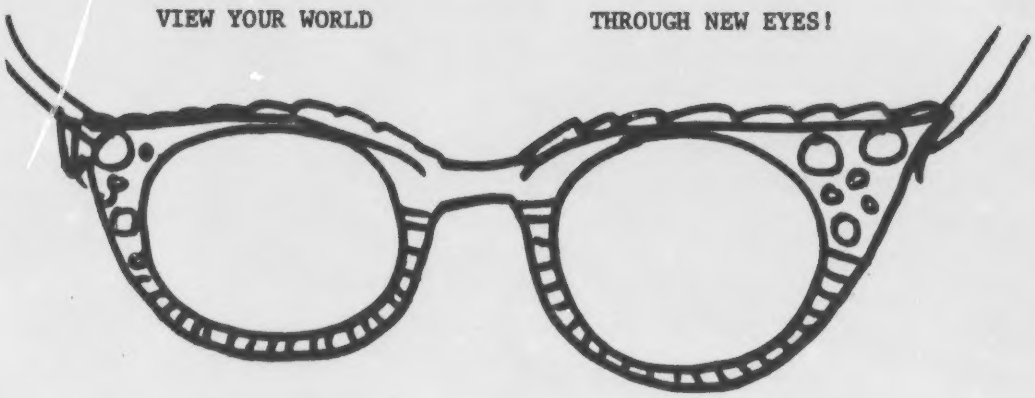
ALL IN ONE


Explore from every position!
Be flexible!
TRY ANOTHER WAY!
MAKE YOUR OWN!

Find all 26 letters of the alphabet in this all-in-one. You will need to study it from every direction to find them all.

Try making your own all-in-one.

C
Task Card 14



Materials Needed

Colored cellophane
Tagboard
Scissors
Paste

Activity

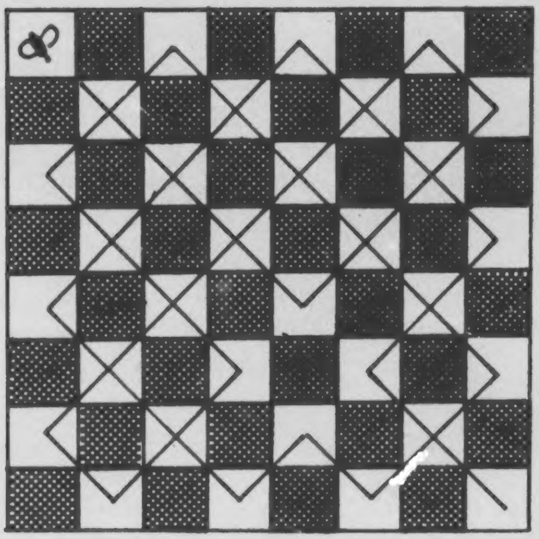
Here is a way to rediscover a familiar environment. Create a flamboyant pair of eye glasses with cellophane and tagboard.

Take a cognitive walk and rediscover your environment.

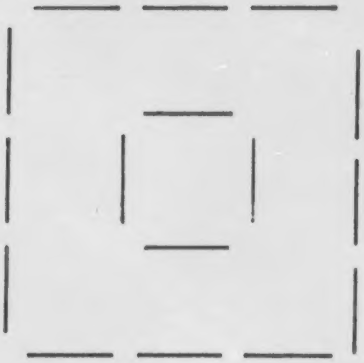
Think divergently on this comprehension activity and experiment with blending the colors.

ANSWERS

Task Card 10



Task Card 11



155

MEMORY

166

MEMORY *

INTRODUCTION

Code - M   Color - Blue

Memory is the retention or storage with some degree of availability of information. Memory is essential to academic success and is one of the easiest of the operations to develop. There are many fun activities and interesting tasks available which will motivate students to improve their memory. Many commercially made games are available which can enhance memory training.

It is important during memory lessons to encourage the students to discuss how they remembered things. Did they repeat a concept over and over (repetition), did they close their eyes and picture it, did they make associations? By encouraging this informal analysis students become aware of the different memory systems, try them and, hopefully, discover the systems that work best for them. Many mnemonic devices can be taught. Excellent books (many in paperback) are available on memory training. These are excellent sources of information for both the teacher and student.

Have fun with these lessons.

GLOSSARY FOR SOI FACTOR DEFINITIONS IN MEMORY
(WISC-R Analysis)

MFU - Recalls materials learned by visual and auditory presentation
MFS - Recalls arrangement of objects previously presented
MFT - Memory for transformations of figural material previously changed

MSU - Recalls for immediate production after one presentation a series of numerals or letters
MSS - Memory for a system of numerals, symbols, or letters
MSI - Memory for well-practiced number operations

MMU - Reproduces previously presented ideas or words studied
MMR - Remembers meaningful pairs of words
MMS - Remembers order of materials or events presented visually or auditorially

---

*The memory section does not have an answer section.

	F	S	M
U	MFU Memory of Objects Presented Map Memory	MSU Morse Code Memory for Letters Digit Recall	MMU Memory of Words Flash Cards Definitions
C	MFC Memory for Classes Recall of Classes Presented	MSC Memory of Word Classification Memory of Number Classes Presented	MMC Memory of Word Classes Presented and Removed
R	MFR Study and Recall, Positions Placement Memory Memory of Paired Figures	MSR Memory of Letter Series Memory of Names Memory of Words/Numbers Any Mnemonic System	MMR Antonyms Analogies Presented
S	MFS Memory of Positions Memory of Sequential Positions Memory of Dances Memory of Positions (Blocks, Page, Designs)	MSS Digits Backward Recall Nonsense Words Memory for Musical Notes	MMS Following Directions Calendar Gossip Game Days of the Week
T	MFT Memory of Block Patterns Memory of Paper Folding Memory of Picture Rotations	MST Misspelled Words Word Transformations Number Reversals	MMT Homonyms
I	MFI Object Recall Figure Recall	MSI Multiplication Tables Addition and Subtraction Facts	MMI Memory for Implications Connections Between Elementary Inferences Match Job Descriptions with Characters in a book

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COMMERCIALLY PREPARED MATERIALS

Many of the commercially prepared educational materials can be used to supplement the activities and materials developed for SOI operations. The following list presents materials which have been coded for the memory operation. In some cases, it was found that the materials could be used for several different cells in the SOI model and were coded accordingly. Additional cells (codes) are indicated in parentheses.

Company	Materials	Code
Instructo	Language Concepts in Song Color Pattern Board	MMU, MFU, MFS (CFR, CFS, NFS, CFU)
	Sort-a-Card	MFC, MFR (CFC, NFC)
	Flannel Board Story Kits	MMS
	Peg Board Sets	MFU
	Magnetic Numerals	MSS, MMS (CSU)
	Number Names & Symbols	MSU
Developmental Learning	Colored Blocks in Squares	MFU, MFR (CFU, CFR)
	Colored Stringing Shapes	MFU, MFR (CFU, CFR)
	Design Cards, Colored Cubes	MFS, MFR (NFR, NFS)
	Colored Cubes/Cards	MFR (NFR)
	Parquetry	MFU (NFR)
	Auditory Perception, Training Memory	MMU
Milton Bradley	Musical Instruments	MFU, MFR (CFU, CFR)
	Beads and Laces	MFU, MFS (CFU, CFR, NFS)
Ideal	Perceptual Development Cards	MFU (Set D)
	Classification Charts	MFC (CFC, CFR)
	Colored Cubes	MFU, MFR (CFU, CFR)
Instructo	Numerals and Counting Shapes	MFU (CFU, NFU, CSU)

BOOKS

Title	Author	Publisher/Company
The Memory Book	Harry Lorayne and Jerry Lucas	Ballantine Books
How To Develop an Exceptional Memory	Morris N. Young, M.D. and Walter B. Gibson	Wilshire Book Co.
Mem-O-Spell		Leisure Learning
Rembi, The Exciting Memory Game		Playing Card Co., D-7022 Leinfelden/Stuttgart, Western Germany
Memory--Card Matching Game		Milton Bradley

MEMORY ACTIVITIES

Activities for the memory factor are presented on the following pages. The letters (code) in the upper right-hand corner correspond to the Memory Activities Grid presented in the Introduction to the Memory section.

MISSING PERSON

For this game you will need a group of ten* students.

Be sure everyone knows all the names of the others in the group. (This can also be a memory activity!)

Choose one person to be "it." "It" leaves the room. Another person is chosen to hide in the closet. The remaining students scramble--change seats. (With very young students this scrambling may be omitted.)

"It" returns to the room and tries to name the missing person.

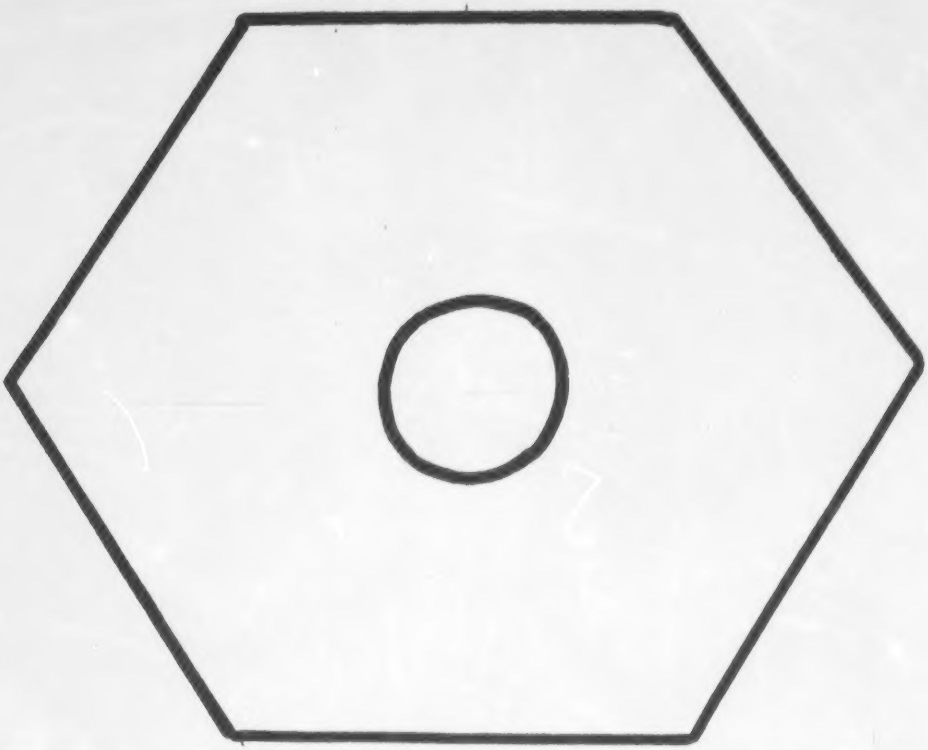
Increase the number of participants to make the game more challenging.

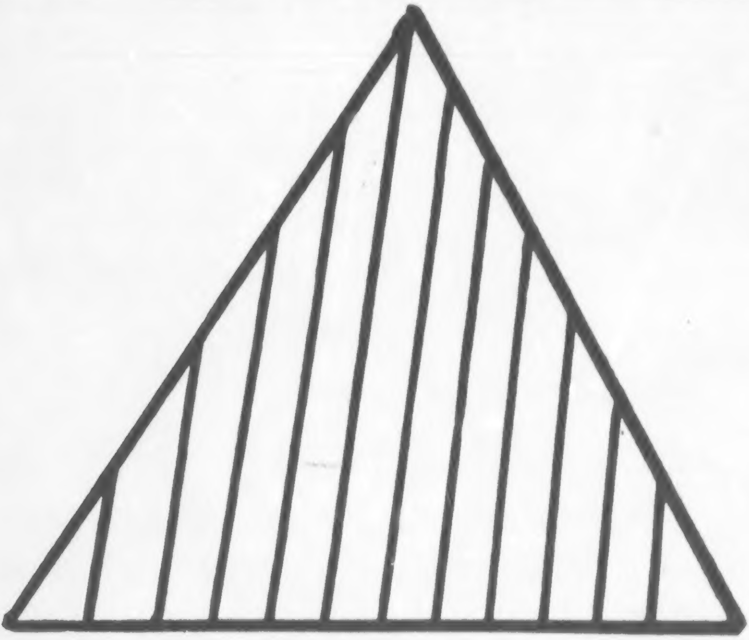
---

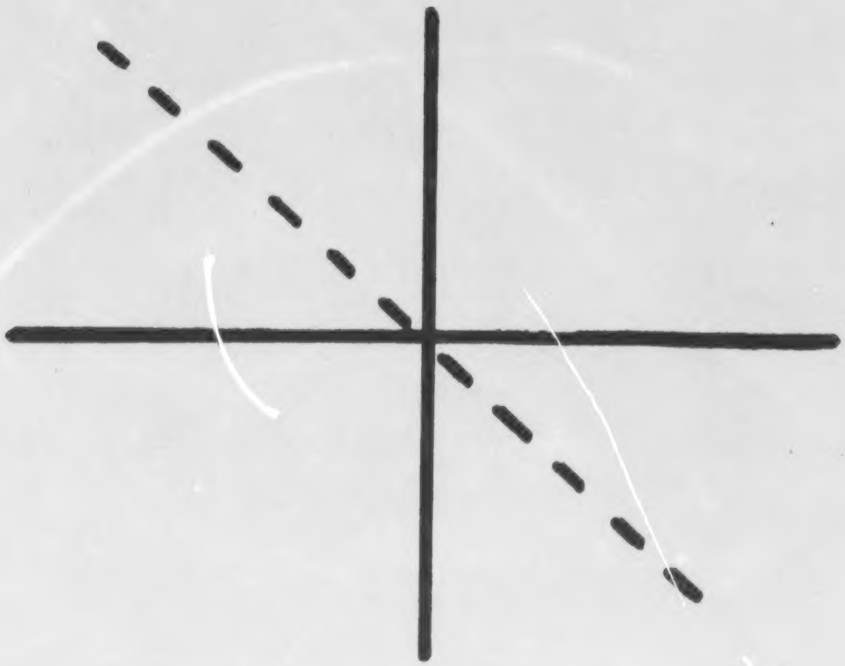
*The number may vary depending upon the ability of the students.

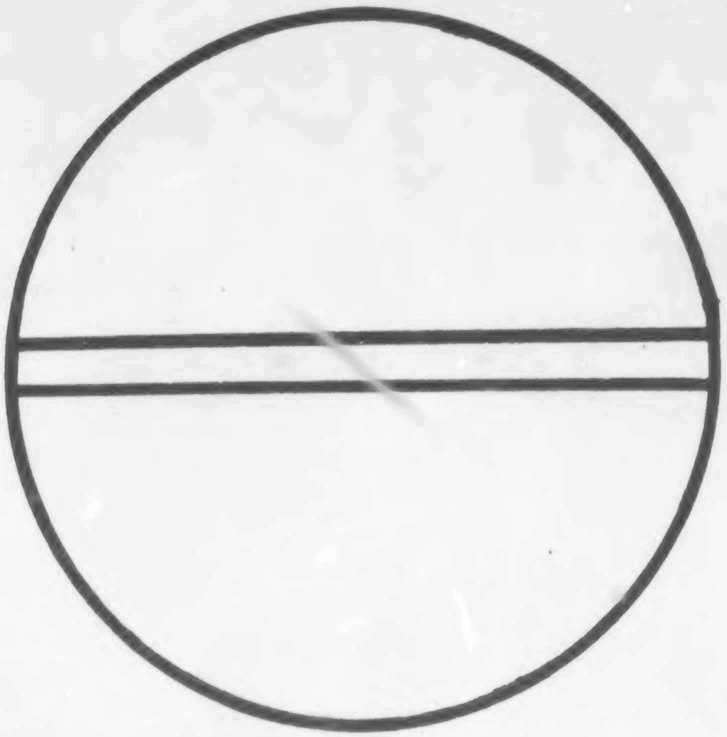
REMEMBER AND DRAW

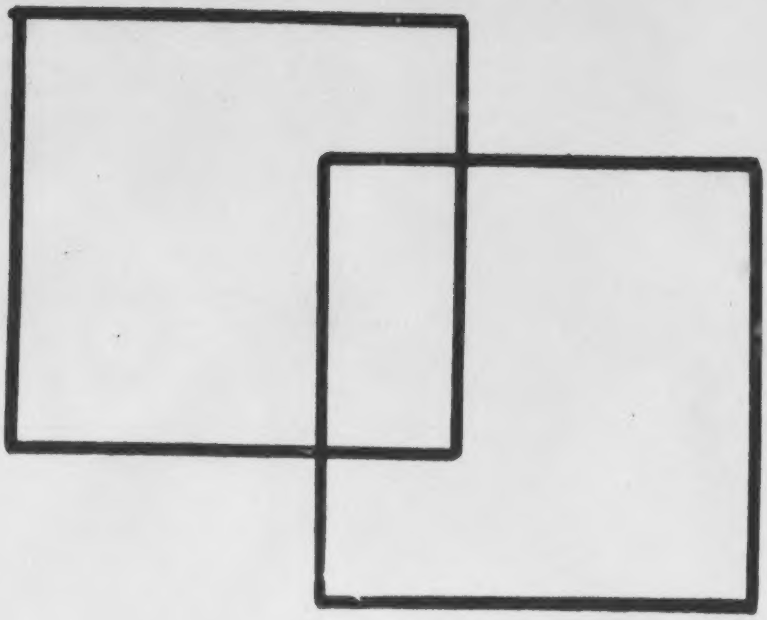
Cut cards apart. Show to students. Students study cards then reproduce on blank paper from memory. Through continued practice students should increase ability to reproduce figures from memory and decrease the time in copying the figures.

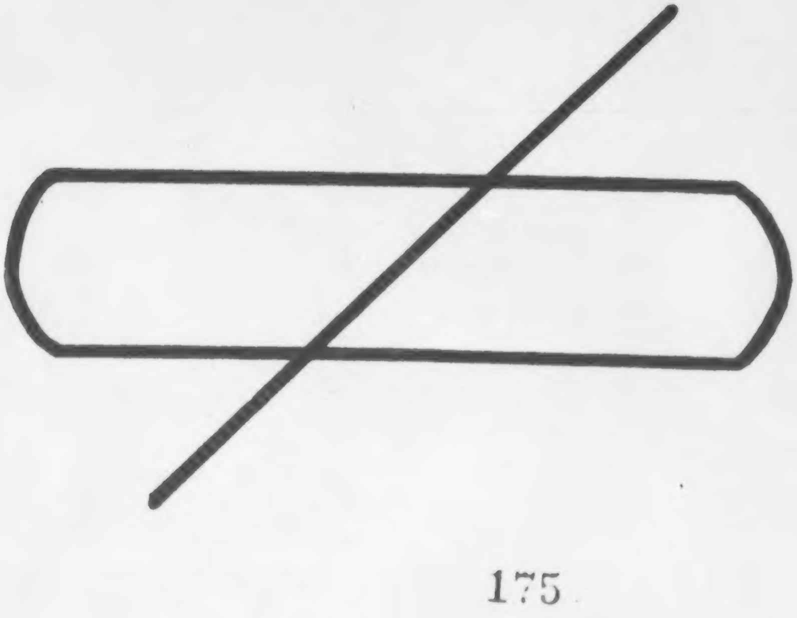






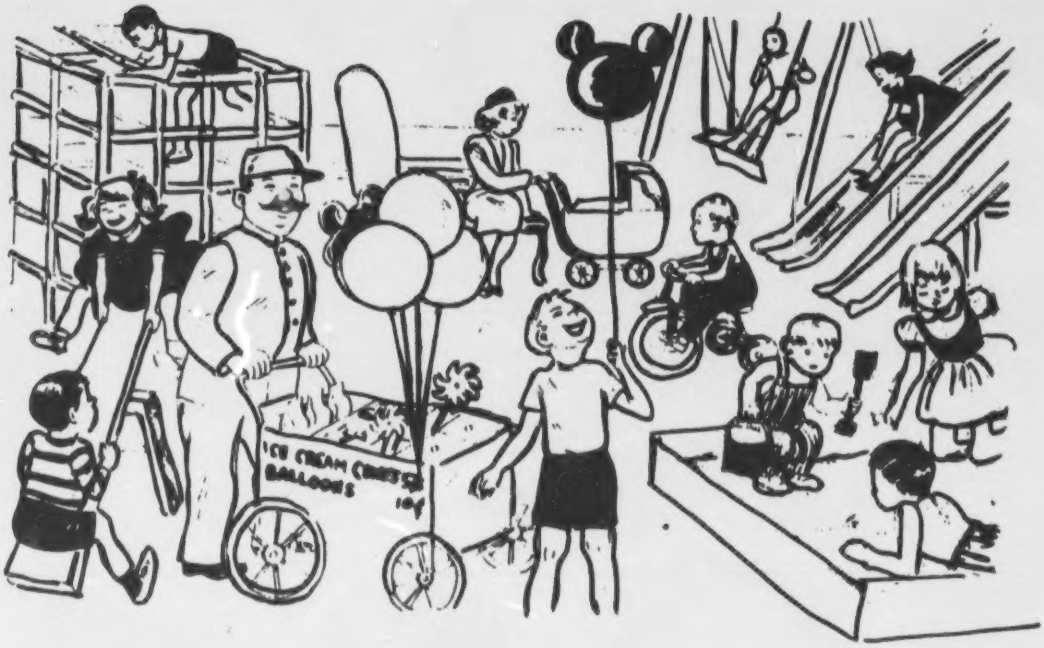






HOW GOOD A WITNESS WOULD YOU BE?

Duplicate for students or make a transparency. Allow three to five minutes for study. Answer questions. (See next page.) Allow students to correct their answers by again seeing the picture.


ICE CREAM CONES
BALLOONS
10¢

HOW GOOD A WITNESS WOULD YOU BE?

Questions for Memory

1. Is anyone riding a tricycle? ______
2. Is anyone playing ball? ______
3. Did anyone buy a pinwheel? ______
4. How many baby carriages are there? ______
5. How many sliding chutes are there? ______
6. Is there a policeman in the picture? ______
7. Did anyone reach the top of the jungle gym? ______
8. Is anyone using the seesaw? ______
9. Was there a boy or girl on the swing? ______
10. How many balloons did the ice cream man have? ______
11. How many children are playing in the sand pit? ______
12. Does the ice cream man have a moustache? ______
13. Is there a swing in the picture? ______
14. Did anyone buy a balloon? ______
15. How many benches are there? ______
16. How many ladies are there? ______
17. Does anyone have a pail and shovel? ______
18. Is the ice cream man driving a truck? ______
19. Is there a wading pool in the picture? ______
20. Is anyone running? ______

MFS-1

MEMORY SYSTEMS

Duplicate for each student and cut into strips. Students study each strip in turn and reproduce it on paper from memory. After finishing all strips, students check. Discuss memory systems used.

1. ● ● ○ ○ ○ ○ ●

2. □ ○ ○ ● ● □ ●

3. □ ● ○ ○ ● ■ ●

4. ■ ○ ● ○ ○ ■ ●

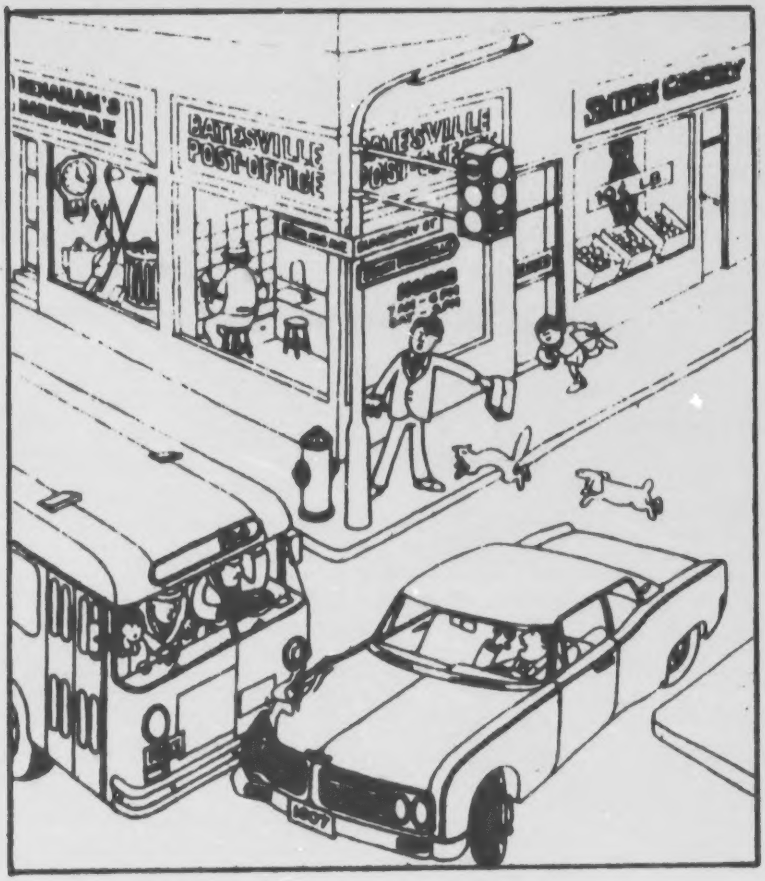
5. □ ○ ○ ○ □ ○ ○

6. ○ ● ○ ● □ ● ○

7. ● ○ ■ ○ □ ○ □

ARE YOU A GOOD WITNESS?

Study this scene for three minutes. Then answer the questions on the next page.


BATESVILLE
POST OFFICE
BATESVILLE
POST OFFICE
SMITH'S GROCERY
19¢ LB

Additional Activity

A good follow-up activity is to repeat this activity the next day. Discuss why it was so much easier to remember when you know what questions would be asked. What does this tell us about memory activities?

ARE YOU A GOOD WITNESS?

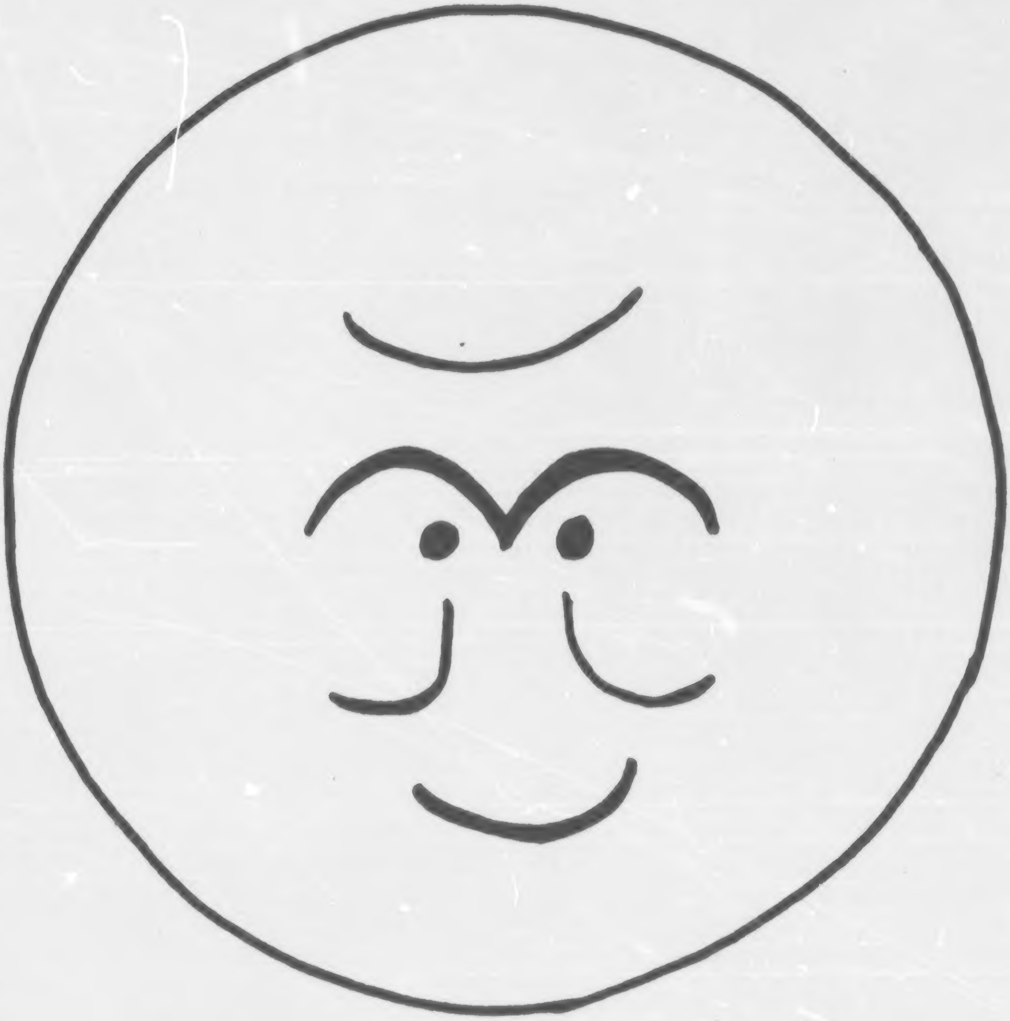
Questions for Memory

1. What was the name of the town? ______________________
2. What time of day was it? ______________________
3. What day of the week? ______________________
4. What season of the year? ______________________
5. Was the automobile a closed car? ______________________
6. What was its license number? ______________________
7. What direction was it going? ______________________
8. Did the driver have a hat or cap? ______________________
9. Was the boy bareheaded? ______________________
10. Which way was the trolley going? ______________________
11. What was its number? ______________________
12. How many people were in it? ______________________
13. How many others saw the accident? ______________________
14. How many people in the picture? ______________________
15. On which street was the grocery? ______________________
16. Who owned it? ______________________
17. On what street was the hardware store? ______________________
18. What was its name? ______________________
19. What was in the window with the clock? ______________________
20. Was there a mailbox on the corner? ______________________
21. How many children were visible? ______________________
22. How many animals were shown? ______________________
23. Was the man in the window bareheaded? ______________________
24. Who had the right of way? ______________________
25. What was the price of bananas? ______________________

FUNNY FACE

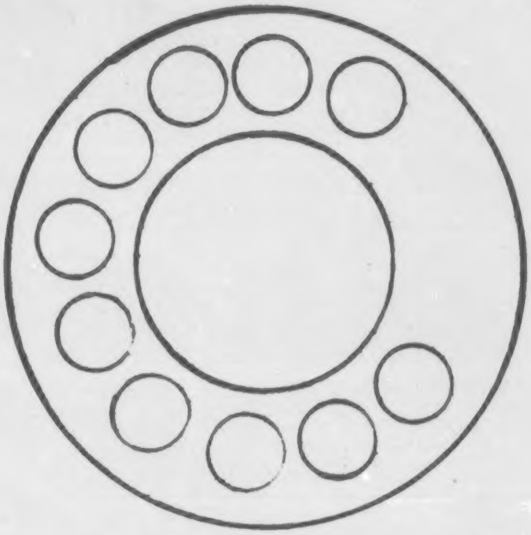
Make a transparency of this funny face. Show to students, using an overhead projector. Rotate face to show both smiling and angry faces. Remove faces; ask students to draw them from memory. Allow students to check themselves by again projecting face.

Discuss memory systems used.



TELEPHONE DIAL

Everyone uses the telephone and most of us use dial phones. Can you fill in the correct letters and numbers in this dial?



- -

U.S. MONEY

Every day we see the same objects over and over again. Day in and day out, week in and week out, we are always looking at certain standard things yet we fail to observe them. How many questions can you answer correctly about the one-dollar bill or the five-dollar bill?

1. Which way is Washington facing?

   a. to your right b. to your left c. neither

2. Which way is Lincoln facing on the five-dollar bill

   a. to your right b. to your left c. neither

3. How many times does the figure 1 appear on the dollar bill?

   4 8 9 12 16

4. Where are the numbers of the bills located?

   a. upper right section c. lower right section
   b. upper left section d. lower left section

5. How many times does the word *One* appear on the dollar bill?

   4 8 9 10 11 12 16

6. Who is the treasurer of the United States?
7. What is pictured on the back of the five-dollar bill?
8. How many times does the word *Five* appear on the five-dollar bill?

   4 8 9 11 16 20

MAZE MEMORY

Materials Needed

Mazes 1, 2, and 3
Pencil
Learning Graph

Activity

Students work with a partner. One student traces a path through a maze with a pencil while the partner records the number of trials (the number of times he/she starts over) and the number of errors made. This information is entered on the learning graph. Different colored pencils may be used to record the data from the three different mazes. This activity may be repeated to measure memory. Using different mazes or after waiting several days, have the student switch activities.

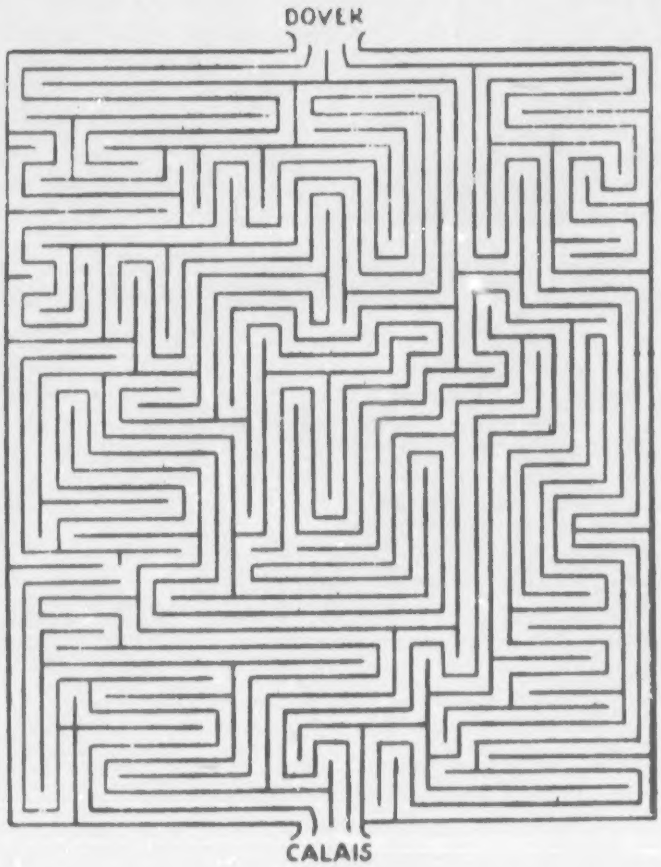
Discuss with Students

The importance of making mistakes in learning something new.

How the mind uses errors to reinforce the knowledge it considers to be correct.

The trial-and-error method of learning.

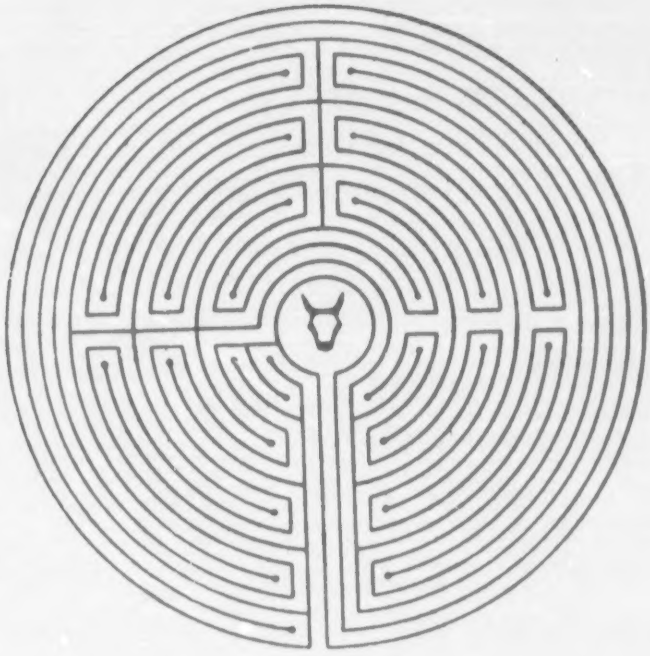
MAZE 1


DOVER
CALAIS

Find the route from Dover, England to Calais, France.

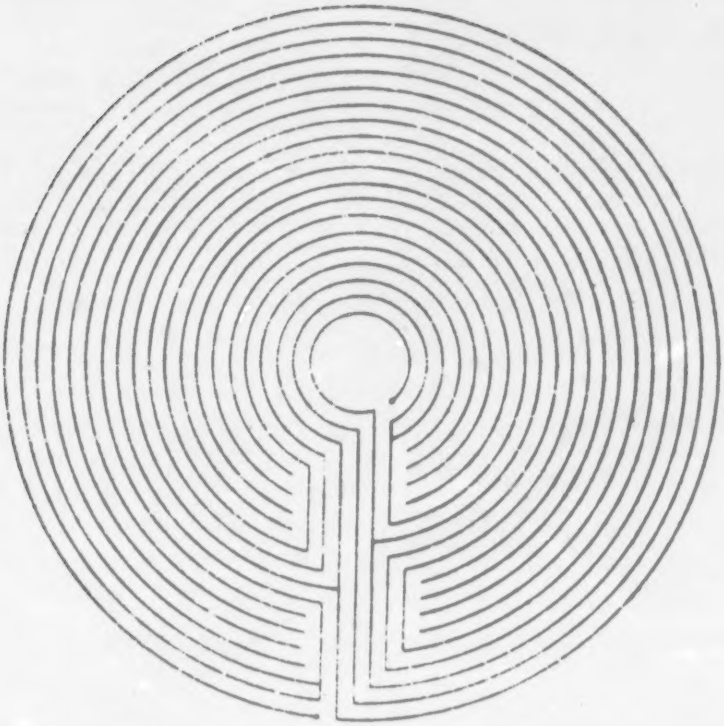
MAZE 2

Start at the bullpen and find a way out.



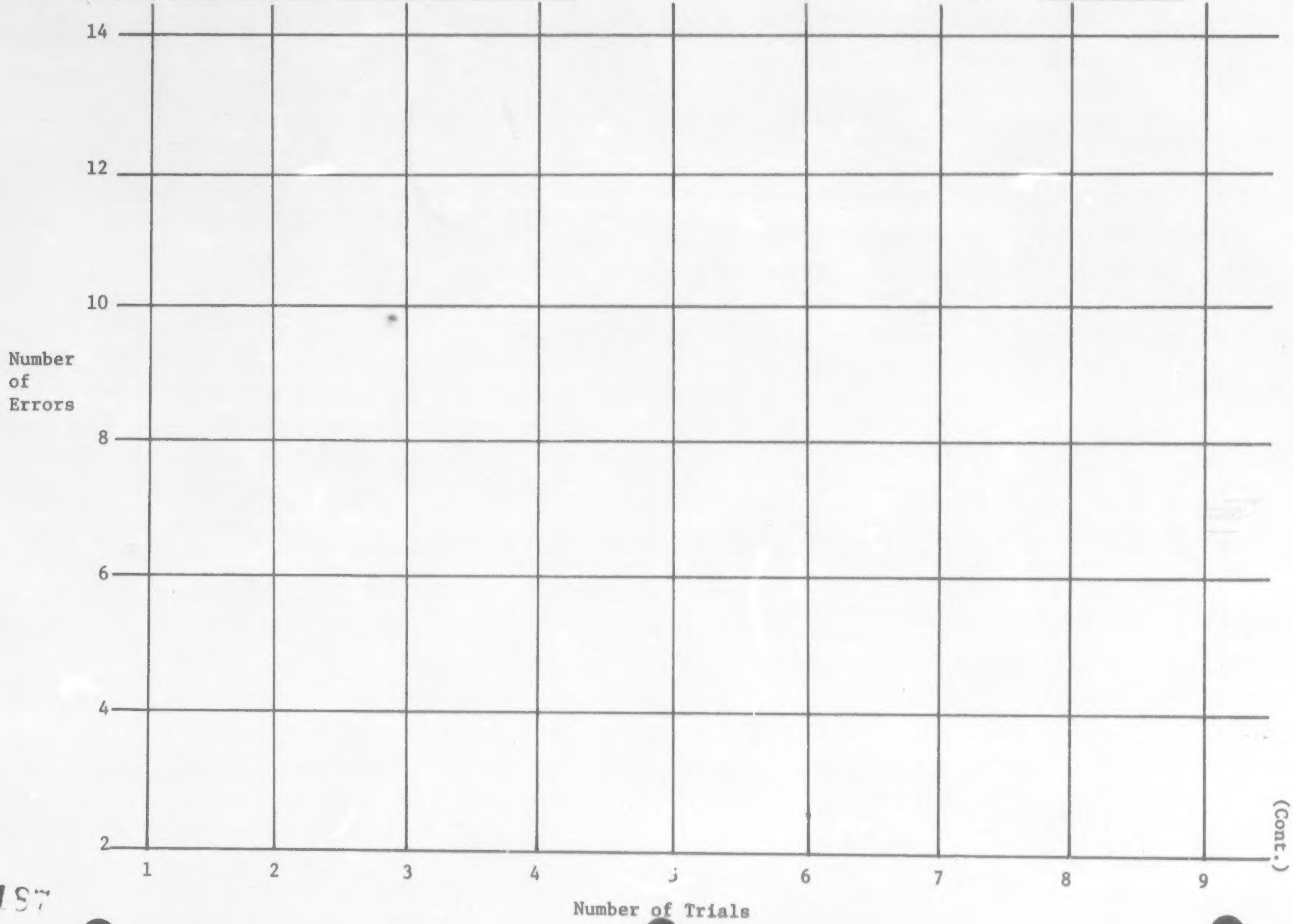
MAZE 3

Start in the bull's-eye and find a route to the outside.



LEARNING GRAPH

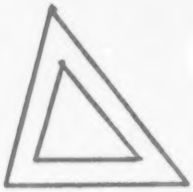
Name ______________________________ Maze Number __________



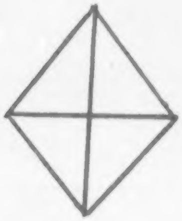
MFI-4

MATCHING DESIGNS

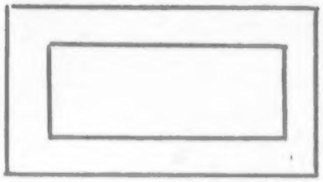
Hold up a study card, one at a time, for three to five seconds. Students reproduce the designs indicated by the arrow on the cards and match them to the correct design below.



______



______



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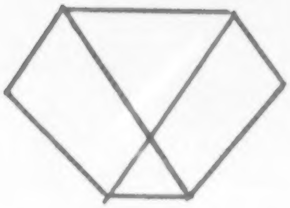
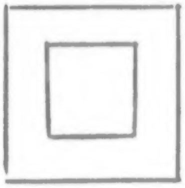


______



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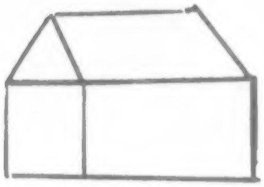
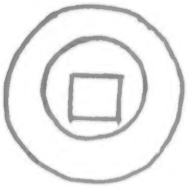
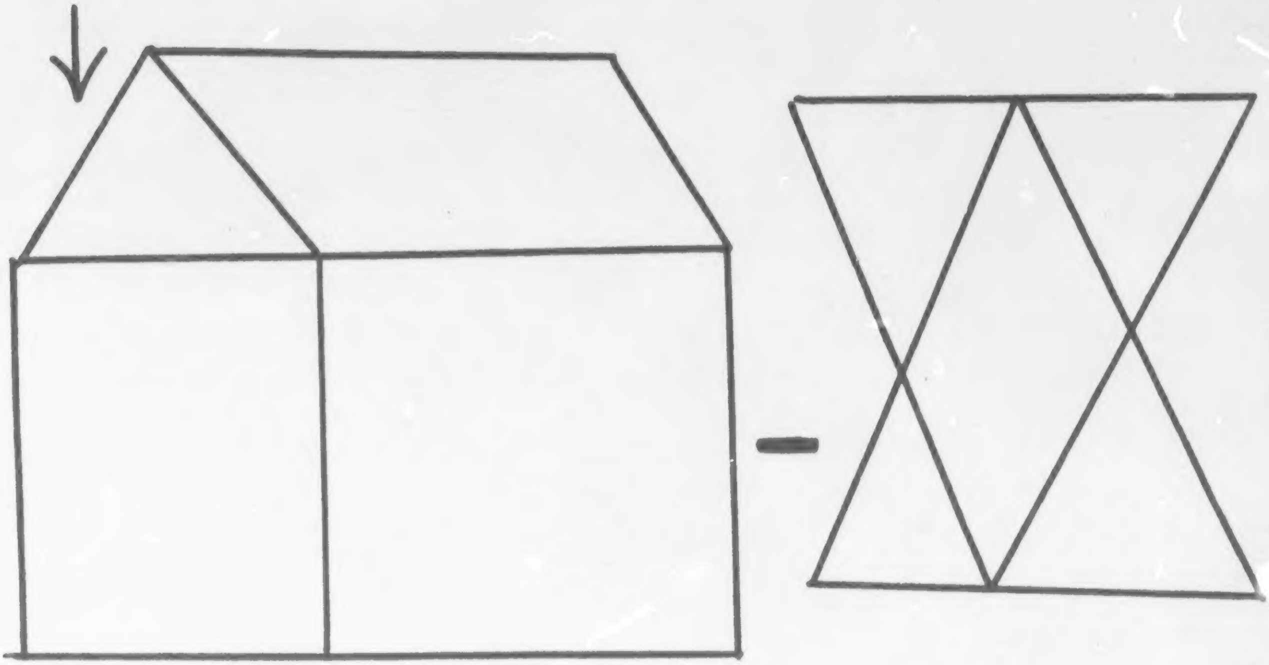


______

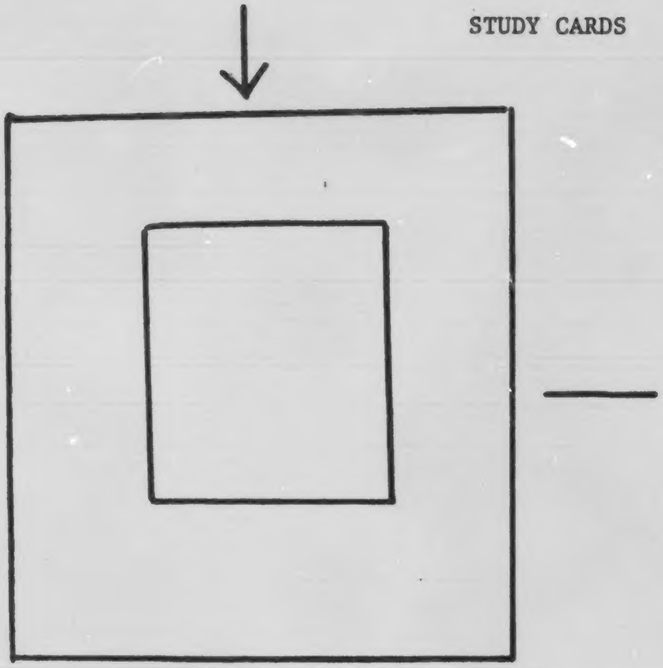


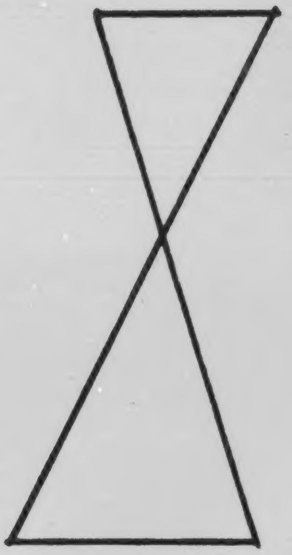
______

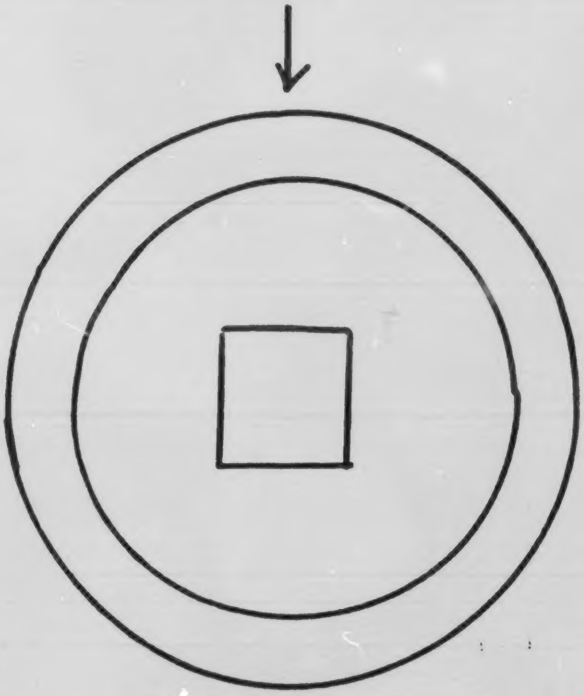
STUDY CARD

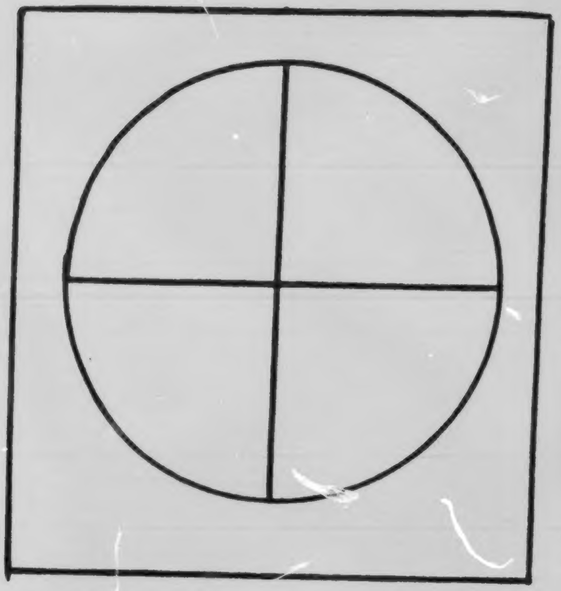


STUDY CARDS

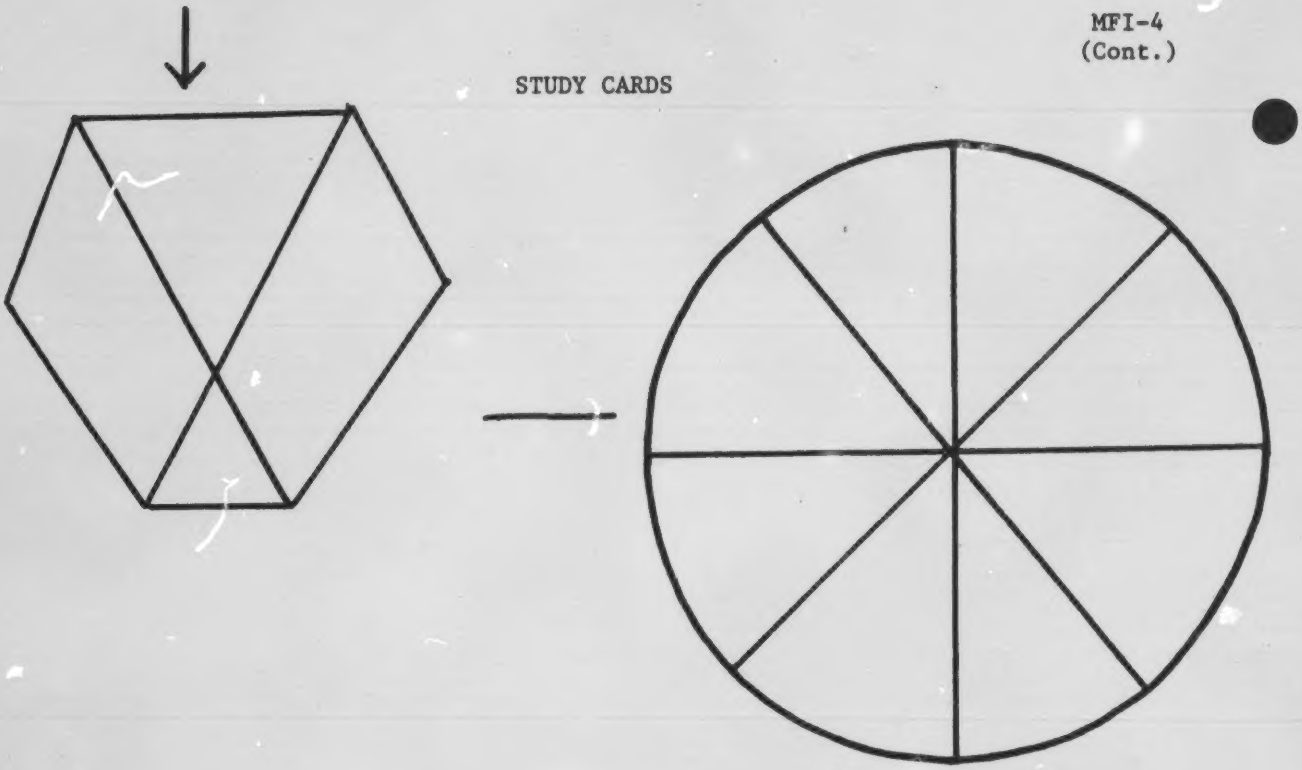


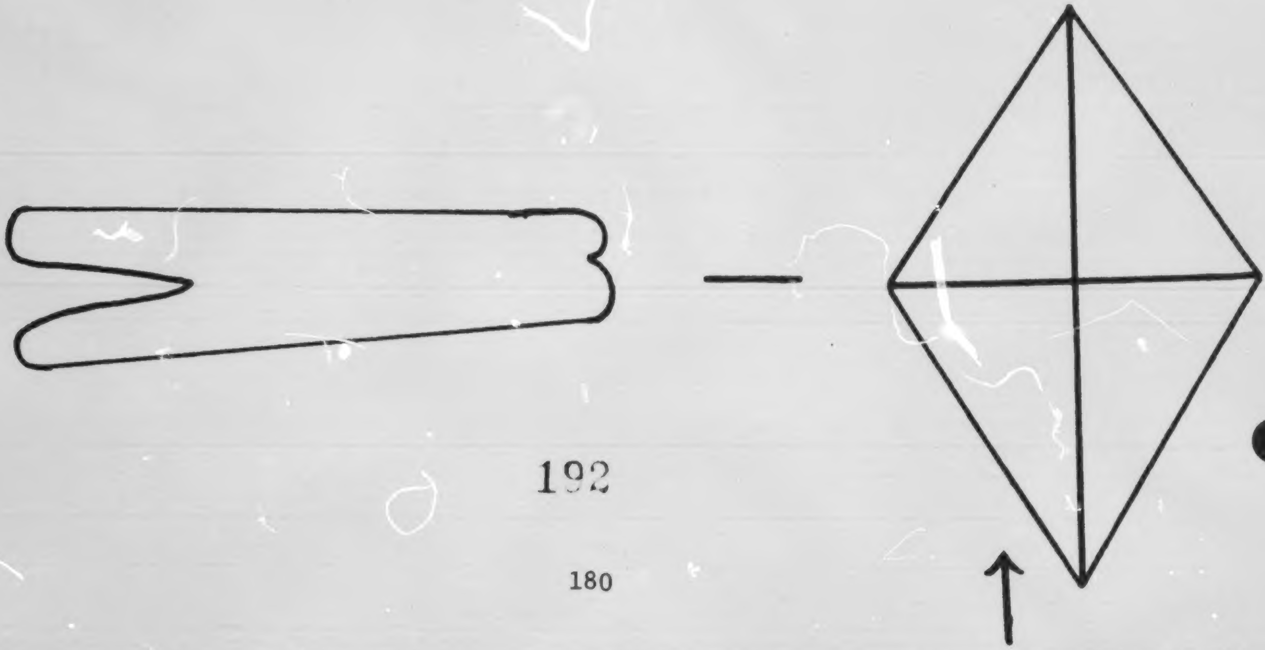




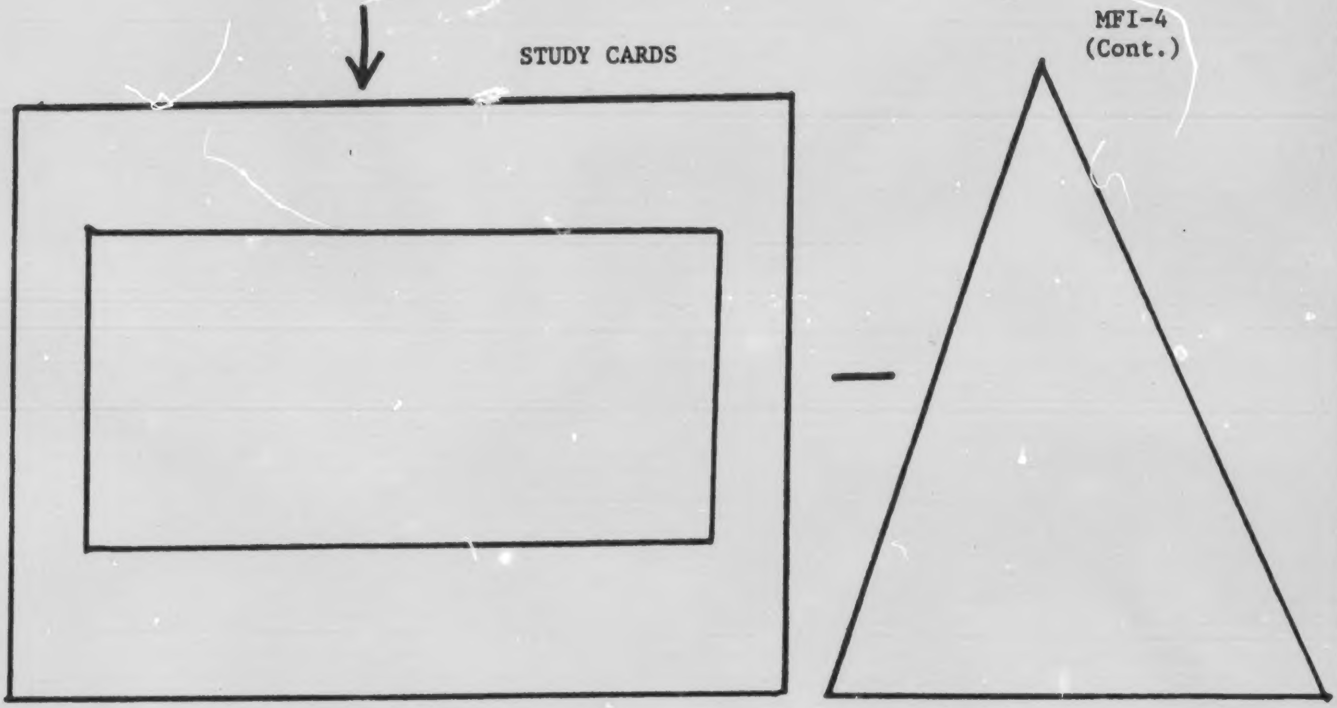


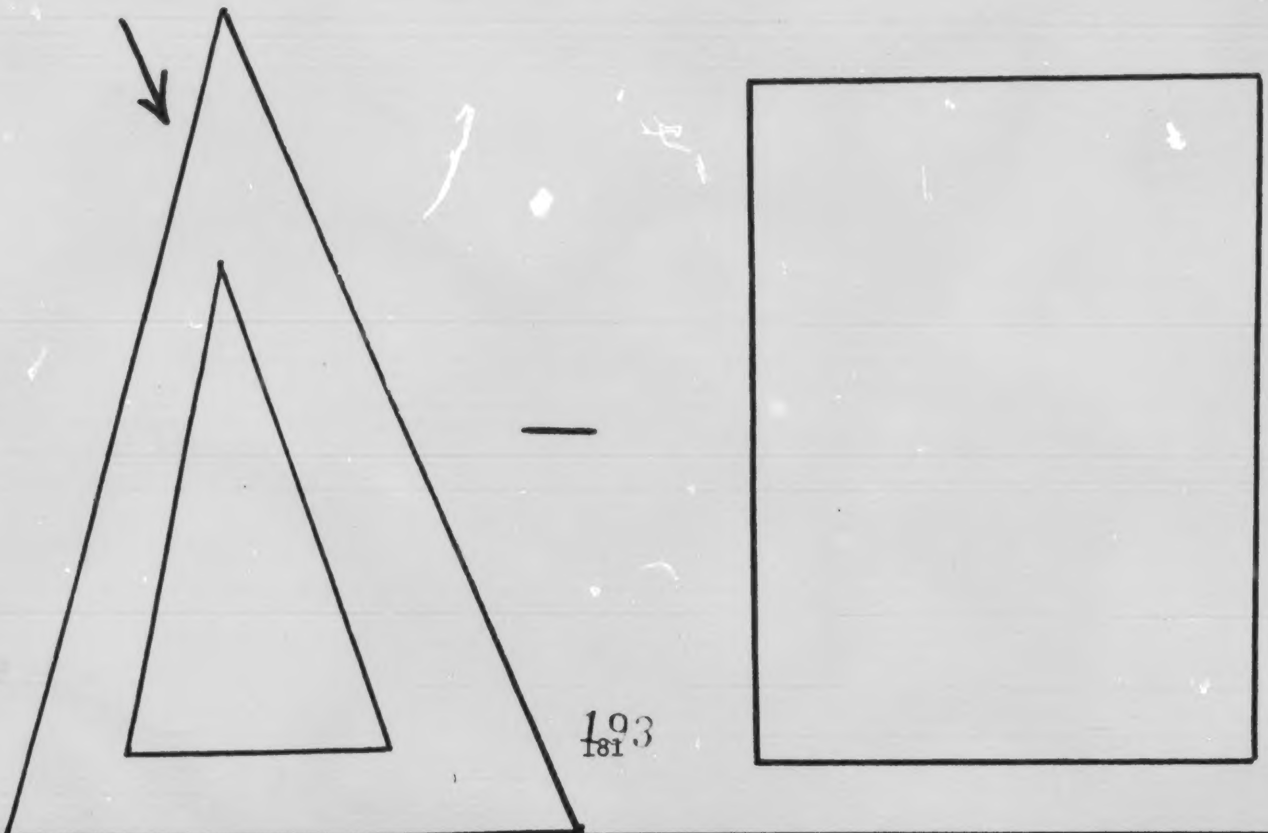
STUDY CARDS





STUDY CARDS





MSU-1

MEMORY OF NONSENSE WORDS

Study Page

Study this list of nonsense words for 60 seconds. You will be required to identify these words from a list of many.

erl
wiz
toz
ow
tep
zew
eil
tem
gib
roz
gub
eol
moz
tel
gob

Test Page

Mark in the "Yes" column those words studied.

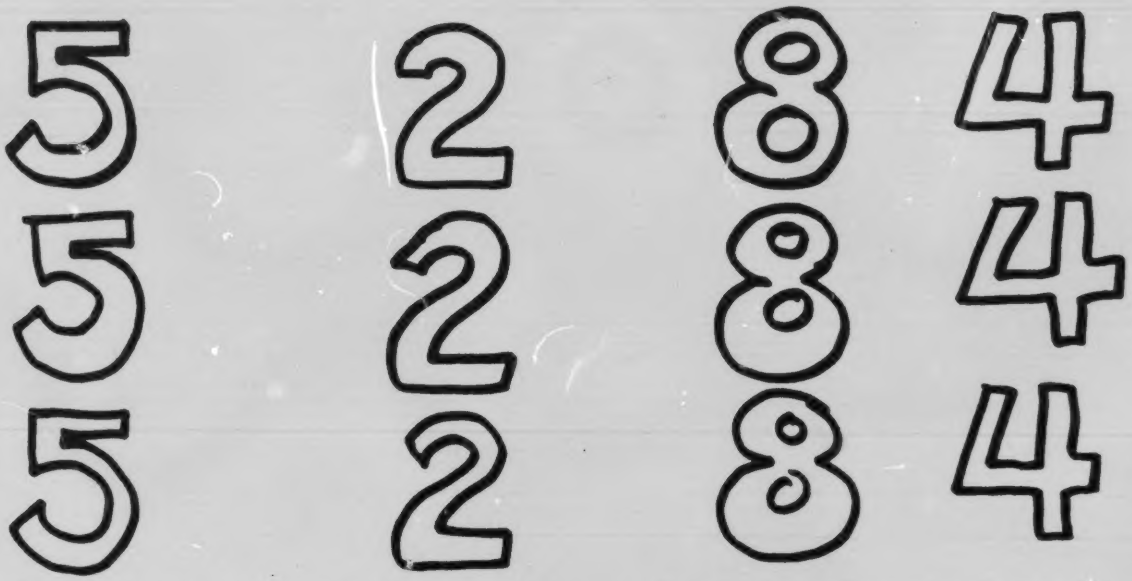
	Yes	No		Yes	No
zpw			roz		
tel			ziw		
zew			erl		
eil			geb		
tep			gib		
zaw			eol		
tem			gob		
eal			tel		
gub			ziw		
foz			tex		
goz			moz		
zew			zow		

Optional activity: Let the students take the study page home. Test the next day.

COLOR THE NUMBERS

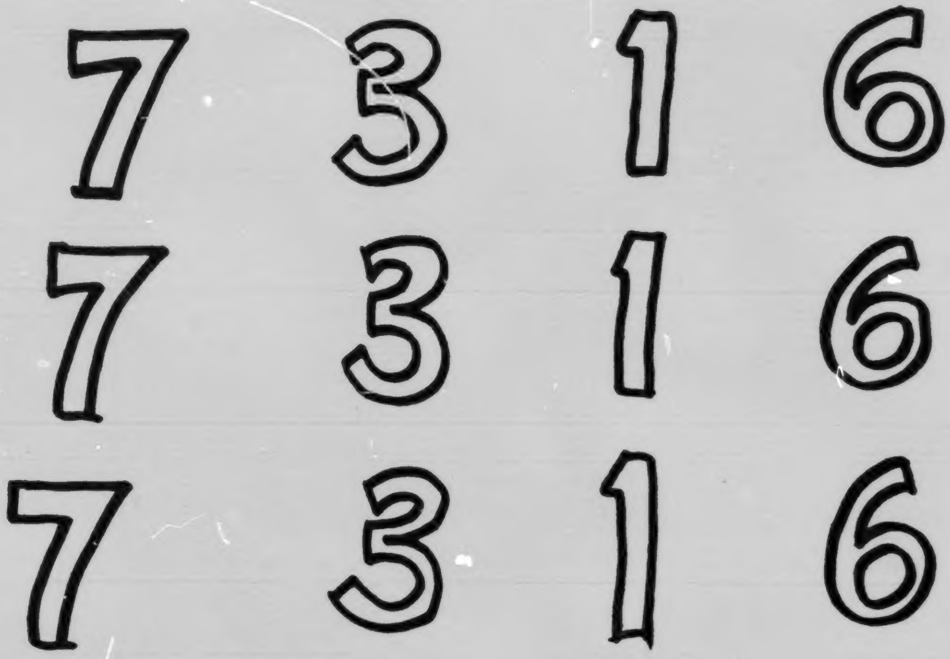
Study Page

Color the numbers. The same numbers must be the same color.


5 2 8 4
5 2 8 4
5 2 8 4

Study Page

Color the numbers. The same numbers must be the same color

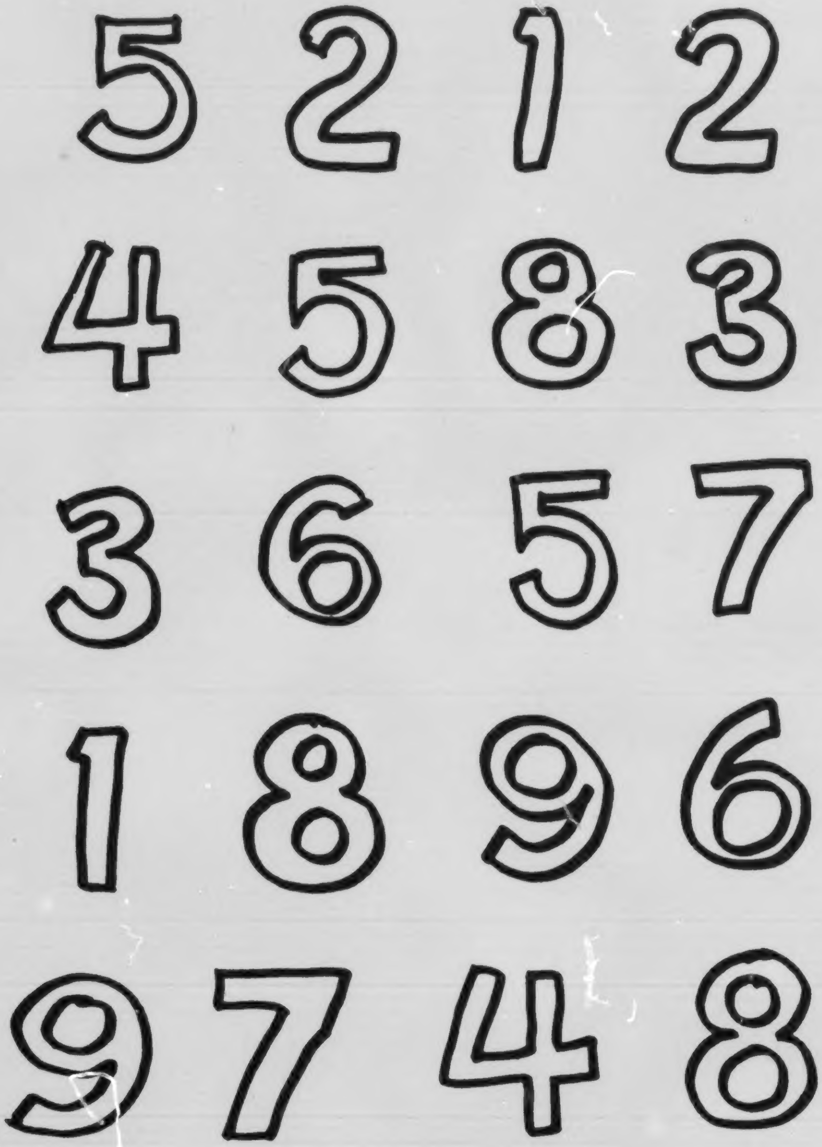

7 3 1 6
7 3 1 6
7 3 1 6

Additional study pages may be made

COLOR THE NUMBERS

Test Page

Color the numbers, each with different colors. Some of the numbers must be the same as those on the study page. (This test sheet may be used many times by placing it in an acetate sleeve. The students mark on the acetate with a grease pencil.)



Study the study page for 60 seconds. The numbers are grouped together because they have two things in common (color and number). You are to remember both.

Circle all the numbers on the test page that would belong to the groups on the test page studied.

IMPROVING MEMORY

Objective of lesson: The student will become aware of how symbolic memory can be trained to improve its use.

Write these letters on the chalkboard:

U I E T S S   N T D T A E

Have students study these letters until they think they have them memorized (about two minutes).

Ask students to recall and/or write the letters. Discuss how much they remembered and how they went about memorizing the letters.

Discuss the possibility of rearranging the letters to make memorization easier.

(At this point the students may have discovered what the letters spell. Let them share if they have.)

Write UNITED STATES on the chalkboard.

Discuss which would be easier to memorize. How can this method be applied to memorization tasks?

Share examples of how to organize information to be memorized in a meaningful order:

Great Lakes: HOMES--Huron, Ontario, Michigan, Erie, Superior--picture *homes* around the lakes.

Music staff: E, G, B, D, F--Every good boy does fine.

Spell the word *piece:* Think of the phrase "a piece of pie."

Voices in a quartet: Picture a quartet being stabbed!--s t a b--soprano, tenor, alto, bass

Ask the students to share memory tricks they know.

EYES AND EARS

Which is stronger, your visual memory or your auditory memory?

Discuss the ways in which we receive information to be stored in our memory:

- -The two main senses we use, vision and hearing.
- -The fact that some people remember what they see better (visual memory), and some people remember better what they hear (auditory memory).

Activity

1. Distribute lined paper. Have students number from 1-15.
2. Read a series of numbers (beginning with three digits progressing to eight digits).

   After the last digit is read, the students write the numbers in the order in which they were read.
3. After the last number series is read the students correct each series as they are repeated.

Repeat this exercise, only present the number series on flashcards.

This activity may be done by the teacher or the students may work with a partner to present numbers to each other.

NUMBER SERIES ON CARDS

MSS-1
(Cont.)

CARD SET A
(For first student in pair)

1. 4 - 0 - 7
2. 7 - 3 - 1
3. 2 - 0 - 7 - 5
4. 9 - 2 - 1 - 6
5. 3 - 1 - 6 - 2 - 5
6. 2 - 9 - 1 - 6 - 3
7. 1 - 0 - 9 - 4 - 5
8. 6 - 2 - 5 - 8 - 9 - 7
9. 1 - 0 - 3 - 9 - 7 - 9
10. 3 - 9 - 2 - 9 - 6 - 3
11. 5 - 0 - 6 - 2 - 4 - 1 - 4
12. 2 - 8 - 6 - 4 - 5 - 3 - 1
13. 4 - 3 - 2 - 9 - 6 - 1 - 7
14. 8 - 2 - 6 - 1 - 9 - 4 - 3 - 0
15. 5 - 9 - 8 - 7 - 3 - 6 - 4 - 1

CARD SET B
(For other student in pair)

1. 3 - 2 - 6
2. 6 - 9 - 5
3. 4 - 6 - 1 - 8
4. 8 - 5 - 6 - 7
5. 9 - 4 - 6 - 2 - 3
6. 3 - 0 - 5 - 6 - 9
7. 4 - 8 - 9 - 5 - 1
8. 7 - 3 - 1 - 4 - 8 - 6
9. 2 - 8 - 0 - 1 - 5 - 2
10. 7 - 6 - 4 - 6 - 9 - 8
11. 5 - 2 - 9 - 1 - 7 - 8 - 3
12. 1 - 8 - 7 - 6 - 2 - 9 - 4
13. 8 - 1 - 7 - 5 - 2 - 3 - 9
14. 6 - 1 - 9 - 4 - 3 - 7 - 8 - 5
15. 1 - 2 - 6 - 5 - 9 - 4 - 3 - 0

MEMORY FOR SYMBOLS

Study this diagram for one minute.

F	P	Y	B
Z	H	K	C
L	V	D	W

MEMORY FOR SYMBOLS

Try to put the correct letters into the squares.

TRANSFORMING NUMBERS

The student is to remember a tranformation in a series of numbers. The transformation consists of, for example, reversals in number series, exchange of first or second pairs, or first and last number shifts. Presented with the test page, the student is required to select the transformed numbers.

Study Pages

Study Page 1 145 - 541 293 - 239 679 - 769	Study Page 2 4781 - 7481 6932 - 6923 8054 - 0845
Study Page 3 9542 - 5924 8736 - 6378 0123 - 3210	Study Page 4 2186 - 6182 7934 - 4397 5273 - 3275
Study Page 5 5678 - 7856 9312 - 1293 6442 - 2446	Study Page 6 9514 - 4519 8765 - 7856 9234 - 4239

The study pages may be reproduced on large cards for use with groups.

TRANSFORMING NUMBERS

Test Pages

Test Page 1

145	514	415	541
293	392	239	932
679	769	967	697

Test Page 2

4781	7841	1874	1947	7481
6932	6923	3269	9632	2936
8054	4058	0845	8504	5408

Test Page 3

9542	2549	2459	9542	5924
8736	6378	6738	8376	7863
0123	1032	3120	3210	0213

Test Page 4

2186	6182	1286	1268	8621
7934	4937	7394	3479	4397
5273	3275	5723	3725	2573

Test Page 5

5678	5768	8675	6587	7856
9312	2319	9132	1293	2139
6442	2446	4642	2644	6442

Test Page 6

9514	5941	4519	9154	5914
8765	5768	8756	7856	5678
9234	3249	2349	4239	9324

MATHEMATICAL BINGO

The ability to recall number facts for addition, subtraction, multiplication, and division is an important memory activity. A fun way to practice is to play Mathematical Bingo!

Regular bingo cards may be used or copies may be made using this form.

Teacher reads problems for which the answer is 1-75. Students cover the answer if it appears on their card.

The winner is the first student to complete a row, vertically, horizontally or diagonally.

For variation: The winner must form a pattern such as a square or cross.

B	I	N	G	O

Duplicate the bingo card. Have the students insert number randomly:

B - 1 to 15
I - 16 to 30
N - 31 to 45
G - 46 - 60
O - 61 to 75

The teacher may wish to restrict the numbers placed on the cards to the answers to problems under study by the group at the time, such as specific multiplication facts.

WORD MEMORIZATION

Study Page 1

Study the list of words on this page.*

dog
wagon
bird
toy
hat
cake
happy
me
surprise
saw

*Length of time will vary according to the length of the list and the needs of the students.

Test Page 1

Circle the words on this page that were on the study page.

cat
bird
hat
balloon

me
surprise
dog
horse

cake
candy
happy
sad

you
wagon
toy
saw

Construct other study and test pages using words appropriate for the students.

WORD MEMORIZATION

Study Page 2

Study the list of words on this page*

flamingo
crosswalk
suitcase
road runner
watermelon
rocket
breath
character
goblin
unusual

*Length of time will vary according to the length of the list and needs of the student.

Test Page 2

Circle the words on this page that were on the study page.

character
goblin
ghost
rocket
airplane
suitcase

Thursday
belt
crosswalk
hospital
Florida
flamingo

watermelon
garage
breath
angry
unusual
sandwich

Construct other study and test pages using words appropriate for the students.

CLASSIFICATION OF WORDS

Study Page

Study the lists below and remember the classifications of the words in each group. The words are grouped together because they are all members of the same classification.

crayon
paper
pencil
pen

Friday
Wednesday
Saturday
Tuesday

tennis
golf
bowling
swimming

glass
plate
saucer
cup

sweater
pants
coat
dress

ocean
river
lake
stream

palm
poplar
oak
spruce

twenty
fifty
sixty
ten

banana
orange
apple
pear

Test Page

Select from this list the words that would be appropriate names for each of the groups of words you studied.

1. months
2. clothing
3. lakes
4. fruits
5. sports
6. dishes
7. trees
8. materials
9. writing instruments
10. flowers
11. water bodies
12. vegetables
13. numbers
14. tools
15. days
16. minerals

Many similar study and test pages may be made. Use words from spelling, science, or social studies according to the grade level.

MNEMONIC MEMORY DEVICES

Here is a memory system to help you remember lists. This simple rhyme is easy to memorize:

One is a bun.
Two is a shoe.
Three is a tree.
Four is a door.
Five is a hive.
Six is sticks.
Seven is heaven.
Eight is a gate.
Nine is a line.
Ten is a hen.

This list will help you memorize another list by taking the word in the new list and relating it to one of the objects in the original list. If your new list was:

1. elephant
2. refrigerator
3. dog
etc.

You might think one is a bun in the shape of an elephant; two is a shoe flying out of the refrigerator when you open it; three is a tree with a dog sleeping under it.

Picture these associations in your mind as you think them. Try it! It's fun!

There are many other nmemonic devices to be discovered and shared. Find one that works for you!

"RUMOR" STORY

Discuss

How information is communicated.
Errors can be made in information we hear.

Activity

Divide class into groups of five.

Select a leader for each group.

Leader reads "Rumor" story.

Leader retells story to another member of the group.

That person tells a third member, third tells fourth, etc.

The leader remains with the group and puts a check mark over each section of the story that is changed with each telling.

When all the members of the group have told the story, each person should hear the original story and compare it to the story he/she told.

THE STORY

One summer afternoon Sally Jameson was riding her new blue English bicycle along the Old River Road. The dust rose in clouds behind her as she rounded the curve just before reaching the deserted Brightwell mansion.

As she reached the great line of oaks which led to the main house, an eerie wailing began. Thinking at first the sound was the wind in the tree branches, Sally kept on riding, but the noise grew louder and louder.

Although very frightened, Sally decided to investigate. Slowly and cautiously she rode up the long avenue of trees. Suddenly, from the gaping witch-tooth windows, small puffs of black smoke curled into the air. The wailing became a shriek like an air-raid siren. Sally entered the front door.

On her left was a great suit of armor without a head. Hanging over the stair rail was a bright Indian rug crazily colored in orange and gold and green. Scraping sounds like a dog scratching on woodwork came from overhead as Sally mounted the circular staircase.

Stiff with fear, Sally went toward the door. Just as she started into the room, a white shape came lunging at her, and in terror she backed away and fell headlong down the long flight of stairs. Sobbing and crying, she raced from the house and ran down the road leaving her bicycle behind. No one would believe her story but from that day to this, Sally maintains that a white shape in armor and a blanket rides an English bicycle down the dusty roads by the river.

OCCUPATIONS

Study Page

Study this list of authors and titles. Each title suggests an occupation. You will be expected to identify the occupation that goes with each name.

Shulman--*How Children Learn*
Kittleson--*Behind the Stage Lights*
Conner--*How to Grow Roses*
Bennett--*Ocean Life*
Newton--*Good Health Through Good Diet*
Burrows--*Above the Clouds*
Johnson--*How to Build a Wood Frame House*
Bloom--*Exercise for Fun and Fitness*
Bigge--*Pen in My Hand*
Markle--*My Years in the White House*

- -

Test Page

Write the occupation that matches each of the author's names.

Burrows ____________________
Kittleson ____________________
Bloom ____________________
Bennett ____________________
Bigge ____________________
Markle ____________________
Shulman ____________________
Johnson ____________________
Conner ____________________
Newton ____________________

Discuss the occupations. Of course, there may be more than one "right answer."

Construct additional study and test pages to meet the vocabulary level and needs of the students.

MEMORY TASK CARDS

Task cards created for use with the memory factor are presented on the following pages. The task cards have also been printed on heavier stock and the sets (Stock No. 41-S-9941) may be ordered through the Office of Materials Development, 293-8140.

PICK A CARD

Materials Needed

Deck of playing cards

Number of Players

Two

Activity

1. Give a certain number of cards, about five, to your partner.
2. Partner studies the cards for 20 seconds.
3. Shuffle the cards back into the deck.
4. Give the entire deck to your partner who tries to find the cards studied.
5. Increase the number of cards to remember as proficiency increases.

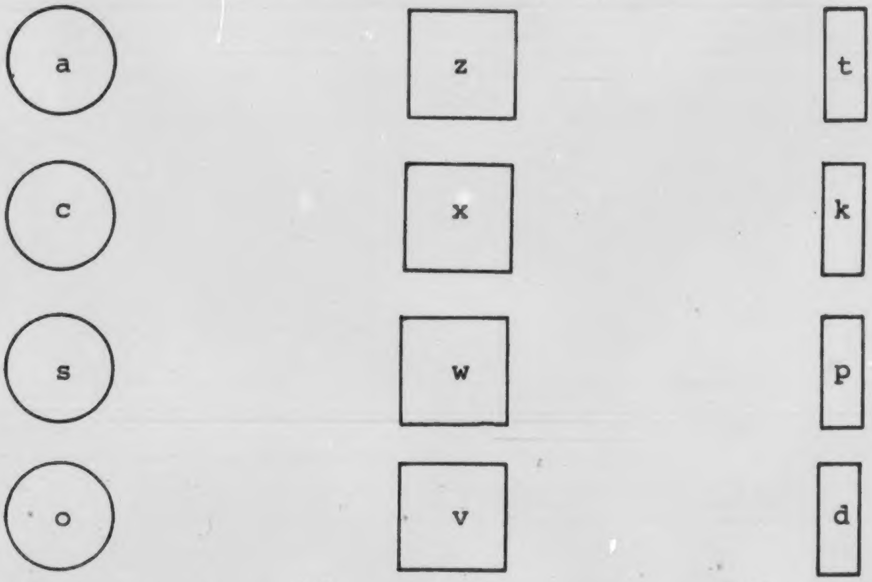
Additional Activity

An excellent follow-up for this game would be to introduce a book on magic tricks with cards.

M
Task Card 2

IMPROVE YOUR MEMORY!

Study the letters and shapes below for 30 seconds, then see if you can draw them from memory on another piece of paper.



In all memory tasks try to find cues that you can use to help you remember things better. For example in the above exercise did you notice that:

1. Each of the letters in the circles was made with a circular motion?

2. Each letter in a square was made with straight lines and was a small letter?

3. Each letter in the tall rectangles was tall (or had a stem)?

Now study these letters for 30 seconds then see if you can write them from memory on another piece of paper. Remember to look for cues to help you remember the letters

p - q	b - d	c - e
w - m	h - k	s - z

CHAOS

General Rules

Chaos is a unique game which calls upon its players to use their memory skills.

Equipment

The equipment consists of one checkers playing board and 24 playing pieces. The playing pieces, when placed face down, are identical, but when turned over reveal a color (squares of chipboard with colored dots on one side).

Preparation

Each player takes six (or fewer for an easier game) playing pieces of the same color and shows the other players. These pieces become his/her set. The set is placed face down on the first row of circles on his/her side of the board. The player who has a green set moves first with play rotating to the left thereafter.

Object

The object of Chaos is to be the first player to move the entire set across the board to the opposite side.

Moves

During a turn a player can move his/her piece in either one or two ways, but always forward, sideways, or diagonally. He/she can move it along the board one circle per turn, or jump another piece directly next to it (including the player's own) as long as there is an empty circle to land on after the jump. A player can continue to jump as long as there is a piece directly next to his/her piece and a circle to land on. Before a player can move any playing piece across the center of the board his/her entire set must be moved out of the original positions, either forward or diagonally.

Penalties

1. When a player reaches the opposite side of the playing board s/he must turn the piece over (face up) and reveal its color. If the color is indeed his/her own, the piece remains there and may not be moved for the remainder of the game. If, however, the color belongs to another player, the playing piece is then turned over, and the player to whom the piece belonged must move it from that position on his/her next turn. The game then continues with the next player's turn.

2. If a player suspects that another player is moving a piece other than his/her own, the player may challenge the other player as soon as he/she has moved the piece. The piece is then turned over revealing its color. If the color is incorrect and the challenged player has moved the wrong piece, he/she must return that piece to the circle it occupied before his/her move and may not make another move until the next turn. If the move was correct and the challenger was wrong, the challenger forfeits his/her next turn.

Winner

The first player to get the entire set on the last row of the opposite side of the board wins the game.

M
Task Card 4

Memory Dazzler

17 9213471897	53 5617853819	35 7415617853
39 1561785381	18 0336954932	74 6842684268

This trick is a fun way to baffle your friends and keep your mental addition skills sharp. Prepare a chart like the one above using any two-digit number and the following rules for the 10-digit numbers:

Add 12 to the two-digit number and reverse the sum. This gives the first two digits of the 10-digit number. Example:

$$\begin{array}{r} 17 \\ +\ 12 \\ \hline 29 \end{array} \text{ -- } 92$$

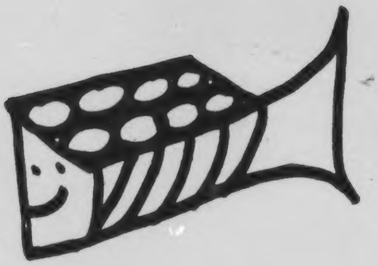
The rest of the 10-digit number is made by adding the two previous digits. If the sum is a 2-digit number, only one digit (in the one's place) is written.

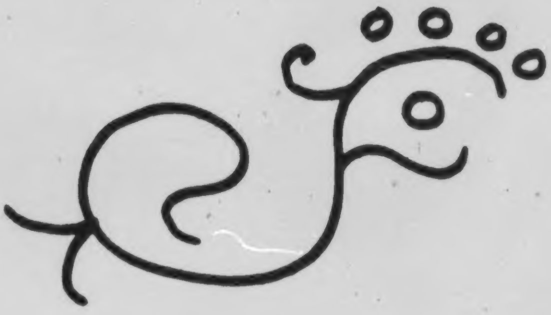
9 + 2 = 11 -- 921   2 + 1 = 3 -- 9213, etc. = 9213471897.

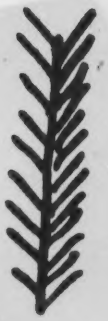
Show your chart to a friend, ask him/her to choose any 2-digit number on the chart and you will amaze them by "remembering" the 10-digit number. (Of course, you don't need to remember the number, just the system for figuring it out!)

Have fun!

DOODLES ARE FUN!







Draw a doodle. Picture it in your mind.

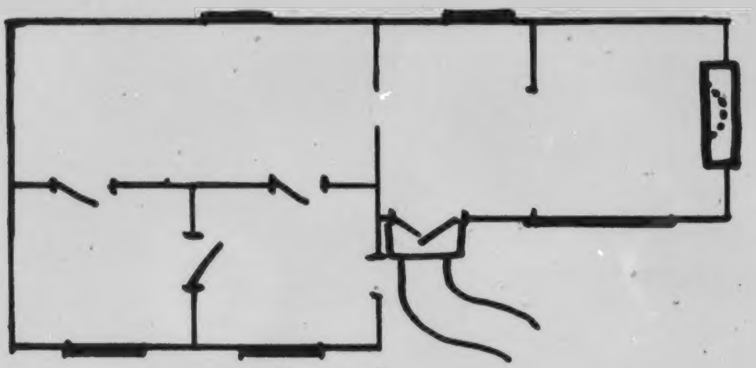
Turn your paper over and redraw your doodle from memory. Compare. Were you accurate?

Add four details to your doodle. Study it and then add the same details to the doodle on the other side of the paper.

Exchange your doodles with a friend and draw the new doodle from memory.

As you repeat this activity, your doodles can get more and more complex as your memory improves!

LONG-TERM MEMORY



Draw a floor plan of your first home *or* draw details of a favorite toy.

Make a sketch of your street and add all the details you can remember.

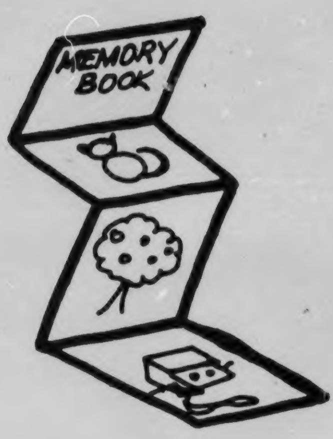
Discuss

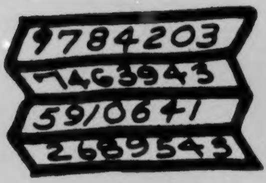
How is long-term memory like a videotape machine?

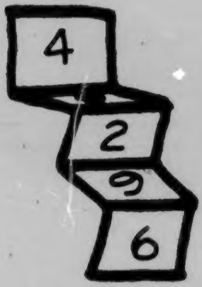
Does memory record everything visually in pictures or does it work with a memory system that records a process?

M
Task Card 7

MEMORY BOOKS







Materials Needed

Chipboard
Plastic tape
Felt pens
Magazine pictures

Directions

Fasten pieces of chipboard together with plastic tape to form a folding "book."

Print numbers, letters, and words on some of the books in varying levels of difficulty.

Make a picture book using magazine pictures. You can cover pages with an acetate sleeve so you can change the pictures.

Practice memory activities with the books with a partner or in small groups.

MEMORY CARDS

Materials Needed

Chipboard
Stickers (available at many stationery, variety, and card stores)
or
Small pictures (2-4 copies of each)
Paste or rubber cement
Clear contact paper

Directions

Rule chipboard into card-size rectangles. (Graph paper affixed to the chipboard with spray adhesive greatly simplifies this task!)

Attach pictures or stickers to the chipboard.

Cover entire board with clear contact paper.

Cut cards apart with paper cutter.

The number of cards determines the difficulty of the game. Make up to 120 cards consisting of 30 sets of 4 identical cards.

Memory Card Game

Any number of players may play.

Object of game: To turn over as many identical cards as possible (2, 3, or 4 of a kind).

Cards are shuffled and placed face down on the table (or floor).

The first player turns over four cards.

If 2, 3, or all cards are identical, then the player picks them up and places them to one side. Those cards which are not identical are turned over in the same position. In this way the game continues, players memorizing the cards as they are turned over, in order that they may select identical cards the next turn.

One player records the score after each turn.

When all players agree that there are no identical cards left on the table, the game ends. The player with the highest score wins.

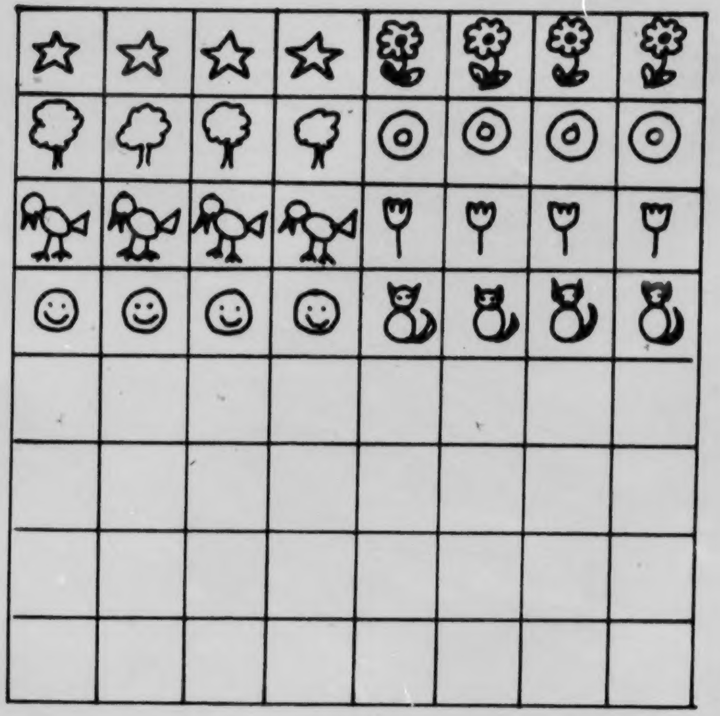
Scoring

2 of a kind - one point
3 of a kind - three points
4 of a kind - four points

Variation

Let the students make the pictures to be used for the cards. The pictures may be very simple or very complex depending upon the students.

A category may be assigned, such as flags or flowers.



SQUARED MEMORY

Materials

21 large *playing* cards with a picture or design
21 smaller *memory* cards with identical picture or design

Number of Players

Two

Object of Game

To memorize and match as many memory cards as possible with playing cards.

To be able to memorize and place the memory cards in the same sequential order as the playing cards.

How to Play

Start with four of the 21 playing cards. Place them face up on the 4-squared-board. Study the group for one minute. Turn them over, face down.

Take the small memory cards, go through them one by one to try and find the four cards that you think match the four playing cards. Try to put them in the same order as you laid out the playing cards on the board. Turn the playing cards over to see how many were matched correctly.

Give yourself one point for every matched pair. Give yourself an extra point for each card you placed in the proper order.

After you have received 100 percent on both matching and sequence with the four cards, continue the same idea with nine cards, studying the cards for two minutes, working up to 16 cards, studying them for three minutes.

This game can be played on boards by showing the students how to place the cards in a 2" x 2" matrix (4 squares), 3" x 3" matrix (9 squares), or a 4" x 4" matrix (16 squares).

M
Task Card 10

"TWELVE" MEMORY

Materials

Four picture cards on which are pasted 12 different pictures.

Twelve 2" x 4" description cards for each picture card. These cards may be just one word or a sentence. Forty-eight description cards are needed for four players.

Number of Players

2 to 4

Object

To memorize all the pictures on a picture card and be able to find as many matching description cards as possible.

Rules

Each player is given a picture card on which are pasted 12 different pictures. A time limit of *two minutes* is given the players to study their cards carefully and try to keep in mind the pictures found on their own card.

At the end of two minutes, the players place the picture cards face down on the table in front of them. The player who held picture card No. 1 then takes the stack of 48 description cards, shuffles them, and deals six to each player. The remainder of the pack is placed in the middle of the table. The players then look through their description cards to see if any of their cards describe one or more of the pictures on their picture cards. These cards are then placed face down on the table in front of the player. Once a card is placed on the table it cannot be put back into the player's hand. In the event that a player finds all the description cards match his/her picture card, he/she must draw four more cards from the stack and repeat the check for descriptions of the pictures.

The game actually begins when the player who held picture card No. 2 draws a description card from the pack. If the card drawn describes a picture from his/her picture card, he/she puts it on the table in front of him/her and draws another card from the pack. This continues until the player finds one he/she thinks doesn't match. He/She then discards one of his/her cards from his/her hand by placing it face up by the pack of description cards. The next player on the left then takes a turn. He/She may draw from the pack or pick up the discarded card of player No. 1.

The game continues in this mannner. If the discard pile builds up and the player in line for a turn wants the card on top of the pile, he/she must take the entire pack. No player may take the discard pack unless the card *on top* is one that he/she needs. The game ends when a player accumulates all 12 description cards that match all pictures on his/her picture card. He then calls "Twelve." This player then turns all description cards and the picture card over and checks to see if they match. If no mistake is made that player receives 60 points or 5 points for each match. If, however, he/she has made a mistake he/she then loses 5 points. All other players then check their cards in the same manner with each player receiving 5 points for each match or losing 5 points for a mistake. When one player has received 60 points in one game the picture cards should be exchanged by the players and another game resumed. At the end of the playing time the player with the most points is the winner.

"FLASH" MEMORY

Materials

32 picture cards
5 sets of direction cards (12 cards to a set)
9" x 12" manila paper (one sheet per player)
Pencil or crayon (one per player)

Players

One player is preferable, but four may play to make it into a game to see who has the best memory.

Object

To be able to remember the sequence of picture cards and draw those pictures called for on the direction card.

How to Make

The picture cards are merely pictures colored and cut from a coloring book and pasted on individual cards.

The direction cards contain such directions as "Draw all four cards," "Draw the first and last picture," "Draw the second and fourth picture," and so on. For the harder sets one direction could be, "Move the first picture to the last position, now draw the first picture."

By using only four picture cards per player and thinking of all possible combinations, you should end up with 12 direction cards to a set.

Rules for Set 1

Each player folds his/her paper into 12 squares, and numbers the squares from 1-12. S/He then shuffles the picture cards and lays the top four cards of the stack face up on the table in front of her/him. S/he doesn't need the rest of the stack. The player should also shuffle the one set of direction cards to be used. Beginning players should always start with set 1. The player places the direction cards in a pack face down on the table. The player then studies the four picture cards for one minute, keeping in mind the sequence and the pictures shown. After one minute s/he turns them face down.

The player then turns over the first direction card and in square No. 1 draws what the card tells. S/He proceeds in the same manner through all 12 direction cards. S/He must not look at the picture cards during this time to refresh her/his memory. When the player is through with the direction card s/he is using s/he should turn it face down and build the pile in the sequence the cards were drawn.

When all 12 cards have been used and the 12 squares filled the player will correct her/his paper by turning the entire stack of direction cards over (they should be piled up in the sequence s/he drew them on the paper). S/He also turns over the picture cards. S/He then checks the drawings against each direction and picture card. When the player gets all 12 pictures correct s/he can go on to sets 2, 3, 4, and 5 which are more difficult.

Rules for Sets 2, 3, 4, and 5

In sets 2, 3, 4, and 5 the player should check his/her work as each direction card is completed.

The picture cards (for convenience sake) should be covered with paper rather than turned face down.

Other than this difference the game is played in the same manner as with set 1.

MEMORY CARDS

Materials Needed

Magazines
Paper (lined)
Pencils
Tagboard
Paste or rubber cement

To Prepare

Find good activity pictures with lots of details. Paste the picture on one side of the tagboard. Write 10 detail questions on the lined paper. Paste on the back of the tagboard.

For Memory Practice

Exchange cards.

Study the scene. (Set a time limit depending upon difficulty of picture and questions.)

Turn the card over and answer the questions.

CONVERGENT PRODUCTION

CONVERGENT PRODUCTION

INTRODUCTION

Code - N   Color - Yellow

Convergent production is the one SOI operation that is commonly used in the classrooms. The shifting and sorting of information to find the "right answer" is convergent production. Research to find an answer and the use of math computation to solve a problem are convergent. Convergent production generally relies heavily on reading skills.

If a student experiences difficulty in a convergent activity it may be necessary for that student to receive remediation in that content or product area in another operation such as cognition or memory.

The activies in this guide are built around the factors which make up the Structure of Intellect and are designed to supplement the material developed by Dr. Meeker found in the SOI *Abilities Workbook*. The activities follow the SOI cell coding called a trigram.

The materials were not written for any particular grade level. If the activity is not appropriate for one grade level, the idea or technique can easily be adapted by changing vocabulary or operations to meet specific needs.

The activities presented suggest a new twist to looking at and solving problems. The activities challenge the students to approach problems from a different angle and to break from the mold in their thinking.

Many of the activities can also be adapted and changed to fit into other operations. For example, activities used in NSC can be adapted for use in ESC since evaluation is used in sorting of information and finding the "right answer" in convergent production.

The first section of the guide contains materials which will be helpful in working with SOI and developing materials to fit the SOI model. A blank grid can be used to plot the needs of students in a particular operation. The names of students who need remediation in the area of NSU would be recorded in that cell, used this way you would need a grid for each operation you work with.

Games and other commercially prepared activities are used effectively within the SOI framework. Not only are these activities stimulating and exciting to the students, but they also offer another dimmension to the SOI program. A list of materials available for convergent production has been included to aid teachers in putting together their own SOI Lab.

Following the coded activities and games, task cards are presented. The task cards have not been cell-coded since they do not lend themselves to any one particular cell but to several.

GLOSSARY FOR SOI FACTOR DEFINITIONS FOR CONVERGENT PRODUCTION (WISC-R Analysis)

NFU - Ability to comprehend and reproduce an observed bit of behavior
NFC - Ability to sort or classify
NFR - Ability to deduce figural relationships
NFS - Reproduces a system of figural design
NFI - Ability to solve simple equations in terms of familiar forms

NSR - Finds nonverbal response to fulfill a given relationship between numerals or letters
NSS - States the order of symbolic systems from start to goal correctly
NSI - Substitutes or derives symbols as expected

NMU - Ability to state correct names of concepts and ideas
NMC - Forms correct groups from a large number of words or objects
NMR - Ability to correlate semantic representation
NMS - Arranges objects or events into a meaningful sequence
NMT - Shifts function of objects or part of something to use in a new way
NMI - Ability to state the correct deduction from given facts

CONVERGENT PRODUCTION

	F	S	M
U	NFU Construction-Reproduction Writing; Copy Name Copy Signs	NSU Changing Digits to Symbols Spelling	NMU Name, Word Groups Contractions Spelling on Cue
C	NFC Picture Classification Cut and Paste Shapes Classification According to Shape Coloring in Forms	NSC Nonsense Words to Classify Classification of Nonsense Words Classification of Oper.--Math Classification of Shapes	NMC Word Classification Classification of Word Groups Job Classification
R	NFR Form Board Manipulation Sequence of Size Block Construction Picture Sequence	NSR Symbol Classification Core Translation Symbol Relationship	NMR Verbal Analogies Parts of Speech Antonyms and Synonyms
S	NFS Design Reproduction Bead Stringing Map Copying	NSS Solving Math Series	NMS Cartoon Sequencing Sequencing Time Sequencing Scrambled Sentences
T	NFT Camouflaged Objects Camouflaged Highlights	NST Camouflage (Buried Words) Magic Squares, Numbers Separating Words	NMT New Uses Composite Stores Reconcile Opposites Daffynitions
I	NFI Picture Completion Map Completion	NSI Algebra--Fill in Missing Number	NMI Deductions-Implications What would you do if . . . ?

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COMMERCIALLY PREPARED MATERIALS

Many of the commercially prepared educational materials can be used to supplement the activities and materials developed for SOI operations. The following list contains materials which have been coded for Convergent Production. This list was taken from a more extensive list compiled by the Austin State School in Austin, Texas, for a PAR project to classify educational materials for SOI. In some cases, it was found that the materials could be used for several different cells in the SOI model and were coded accordingly. Additional cells (codes) are indicated in parentheses.

Company	Materials	Code
Instructo	Color Pattern Board	NFS (CFR, CFS)
	Discovering Opposites	NFC (EFC, CFC)
	Groovy Numerals	NSU
	Sort-a-Card	NFC (CFC, MFC)
	Season Flannel Visual Aids	NFR (CFR)
	Matchups Animals and Where They Live	NFR (CFR)
	Magnetic Counting Discs and Thirty Frame	NFS
	Dominoes	NFR (CFR)
	Concept Builders (Animal)	NFC (CMU)
	Concept Builders (Shapes)	NFC (CMU)
	Know and Show Alphabet	NMU (CSU)
	Concept Builders (Food)	NFC (CFC, EFC)
Trend Enterprises	Punch-A-Shape	NFU, NSU
	Number Sequence	NSU (CSU, CSS)
	Weaving Loom	NFS
Developmental Learning	Body Puzzle	NFR (CFR)
	Lacing	NFU
	Auditory Perception	NFU (CMU)
	Seasonal Stencils	NFU (CFU)
	Animal Stencils	NFU (CFU)
	Farm and Transportation	NFU (CFU)
	Shapes	NFU (CFU)
	Lacing Cards	NFU (CFU)
	Design Cards, Colored Cubes	NFR, NFS (MFS, MFR)
	Assorted Puzzles	NFR (CFR)
	Colored Cubes/Cards	NFR (MFR)
	Parquetry	NFR (MFU)
	Association Picture Cards	NFC, NFR (CFC, CFR)
	Today's Date Box	NSS (CSS, CMS)
Western Publishing Co.	Animal Lacing Cards	NFU (CFU)
	Shape Lacing Cards	NFU (CFU)
Milton Bradley	Beads and Laces	NFS (CFU, CFR, MFU, MFS)
	Checker	NFS

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Company	Materials	Code
Milton Bradley	Tick Tock Primary Clock	NMS (CFR, CMS)
	Checker-Acey-Ducey-Backgammon	NFS
	Flash Cards (Addition, Subtraction, Multiplication, Division)	NSS
	Colored Dot Dominoes	NFC (CFC, CFR)
	Addition-Subtraction Quizmo	NSS (CSR, ESR)
Ideal	Sequence Pictures	nfs
	Stencils for Tracing	NFU
	Perceptual Development Cards	NFU (Set I) (Mfu Set II)
	Community Helper Crossword Puzzle	NMS (EMS, CMR, CMS)
	Transportation and Communication Crossword Puzzle	NMS (EMS, CMR, CMS)
	Place Value Board	NSS (CSS)
	Subtraction Flash Cards	NSS
	Flash Cards Addition	NSS
	Crossword Puzzle (Food)	NMR (CMR)
	Holiday Crossword Puzzles	NMR (CMR)
Whitman	Superman Flying Bingo	NFC
	Lacing Cards	NFR
	Beginning Arithmetic, Grades 1 & 2	NSS
	Puzzles	NFR (CFR)
Instructo	Classification Game	NFC (CFC)
	Numerals and Counting Shapes	NFU (CFU, MFU, CSU)
	My Face and Body Positions in Space Posters	NFR (CFR)
Play Doh	Modeling Clay, Papier Maché	NFU
	Play Doh	NFU, (DFU)
M.I. Toys	Plastic Building Blocks	NFU (DFU)
Doubleday	Learning Numbers Is Fun	NSS
Webber Costello	Count to Ten	NSS (CSS)
Cupid	Time Learner Clock	NMR, NMS, NFR (CMS, CMR, CFR)
Watkins	Pass-O	NFR (CFR)
Teacher Made	Templates	NFU
	Match for Shape and Color	NSR (CFR, CSR)
	Cursive Tracing Boards	NSU
	Addition-Subtraction Game	NSR (ESS)
Educational Projects	Seasons Learning Manual	NMR (CMR, EMS, EFU, EMR)
Playschool	Toy Builder	NFU (DFU)
	Rainbow Tree	NFS (CFR)
	Parquetry Blocks	NFR (CFR, MFR, MFU)

Company	Materials	Code
Playschool	Matchup	NMU (CFR)
	Shape Groups	NFC (CFC)
Sifo	Clock	NMS, NFR, NMR (CMS, CSS, CFR, CMR)
Garrard	Picture Readiness Game	NFR (CFU, CFR)
Kenworthy Ed. Service	Phonics for Reading	NMU (CMU)
Judy	Cardboard Clocks	NSS (CSS)
	Clock	NSS, NFU (CFR, CSS, CSR)
	Fractional Circles	NFS, NSS (CSS)
	Puzzle Blocks	NFR
Balcrum	Sum Stick	NSR (CSS, CST, ESR, EST)
DLM & Ideal	Parquetry	NFR
Crown & Instructo	Dominoes	NFR (CFR)
Playschool & DLM	Color Cubes/Design	NFR
Milton Bradley & Ideal	Peg It Number Boards	NSR (CSR)
Preschool-Elementary Ed.	Counting Blocks	NFS (CFU, MFU, MFS)
	Puppet Playmates	NFU
	Number Sequence	NSU (CSU, CSS)
	Learn to Write Manuscript Letters	NFU (MFU)
	Beads	NFS (if copying)
	Shape Board and Shapes	NFR (CFR)
	Classification Game (Seasons)	NFC (CFR, CFC, MFR)
	Fractional Pies	NFU, NSU
	Number Cards	NFU (CFU, CSU)
	Time Game	NSS (CSS)
	Tennis Shoe	NFS, NFR
	Count-a-Ladder	NFS (CSS)
	Nuts and Bolts	NFR (EFR)
	Tracing Cards	NFU
	Groovy Letters	NSU, NFU (CFU)
	Groovy Numerals	NSU (CFU)
	Bead Patterns	NFS
	Seging Cards	NFU
	Dimensional Color Block Design	NFR (MFR)
	Buzzer Board Pattern Cards	NFU (MFR)
	Position in Space Posters	NMR (CMR, EMR)
	Sequential Picture Cards II	NMI, NMS (CMS, CMI)
	Association Picture Cards	NMR (CFR, CMR)
	Door Locks	NFR (CFR, CFI, EFI)
	Wood Templates	NFU (CFU)

Company	Materials	Code
Preschool-Elementary Ed.	Lacing and Zipper Boards	NFR
	Abacus Board	NFS (CFS)
	Number Cards 1-110	NSS
	Alphabet Practice Cards (Lower Manuscript)	NFU (CFU, MFU)
	Checkers	NFS (CFS)

MATERIALS FOR THE *SOI ABILITIES WORKBOOK*

The items listed below are needed to complete activities found in the *SOI Abilities Workbook* developed by Dr. Mary Meeker for convergent production.

The list is included in this guide to assist teachers in working with Meeker's material which this guide supplements. The list can be used as a shopping list or for requesting materials from students' families.

As teachers acquire these materials, they should be labeled and placed in a central area for easy access for students, aides, or helpers. Teachers may wish to consider keeping the material for each operation separate.

1. Tagboard
2. Plastic cookie holders from store
3. Coffee cans
4. Tambourine/bells
5. 4 milk cartons
6. Plastic coins
7. Paper money (bills)
8. 2 dozen wooden dowels, 3/8" diameter, 2' long
9. 6 different spices in jars
10. Sponge
11. 1 dozen paper cups
12. 1 dozen popsicle sticks
13. 1 plastic baby bottle
14. 1 glass bottle
15. 1 package 3" x 5" cards (lined)
16. 5 different state highway maps (example: California, Nevada, Utah, Idaho, Arizona, New Mexico)
17. 1 sheet clear acetate
18. 6 pieces strong tagboard, 1' x 2'
19. 1 dozen protractors
20. Jar full of dried beans
21. 1 touch bag full of items (example: plastic spoon, shell, nail, rock, ring, rubberband)
22. 1 package tagboard, 12" square
23. 1 ball of string
24. 1 nut and bolt
25. Magazine pictures of people
26. 2 pair dice
27. Strawberry carton
28. 1 can of peanut shells or plastic ones

CONVERGENT PRODUCTION ACTIVITIES

Activities for the convergent production factor are presented on the following pages. The letters (code) in the upper right-hand corner correspond to the Convergent Production Activities Grid presented in the Introduction to the Convergent Production section.

Answers to activity puzzles and games are presented at the end of the section.

DRAWING FIGURES

Draw the figures as they are described in the statements below.

1. Use your pencil to draw any shape in two sizes.

2. Draw a wavy line.

3. Draw a triangle inside the square.

4. Draw two circles touching each other.

5. Draw a parallelogram.

6. Draw a hexagon with a ball in the center.

7. Draw a b[illegible] put an X in the center.

8. Draw a diamond and put a triangle over it.

9. Draw a cone and draw a circle on the top of the cone.

10. Draw a square and put a dot on each of the four sides.

NFU-2

REPRODUCING WORDS (SIMPLE)

Reproduce or draw the letters for the words (on the left) in the spaces opposite.

color	
grass	
book	
quiet	
song	
clock	

NFU-3

REPRODUCING GROUPS OF LETTERS (COMPLEX)

Reproduce or draw the groups of letters (on the left) in the spaces opposite.

lllllll	
SSSSSS	
mnmnm	
momomo	
ououow	
glglgl	
obstreperous	
labyrinth	

DRAWING GAMES AREAS

Draw a picture of the four-square game area. Use a ruler and make sure all lines are the same length. Measure in centimeters. What is the distance around the four-square area?

Do the same for the hopscotch area. Are the squares in hopscotch the same size as those in four-square? How long is the hopscotch area?

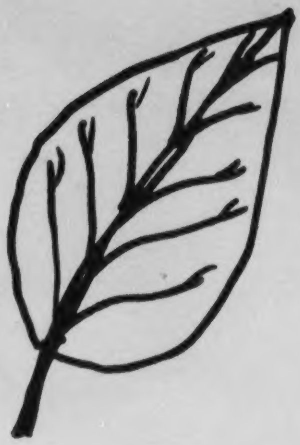
What does a baseball diamond look like? Draw a picture of it. Measure in centimeters the distance between bases.

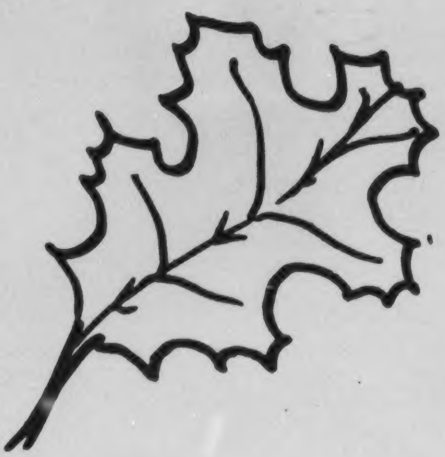
Record: ______________________________

What is the distance from home plate to the pitcher's mound?

Record: ______________________________

LIKENESSES AND DIFFERENCES





List as many ways as you can in which these leaves are different.

1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________ 6. ____________________

Name things that are sticky.

1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________ 6. ____________________

List all things you can think of that are soft and blue.

1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________ 6. ____________________

NFC-1
(Cont.)

What items are yellow that you can eat?

1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________ 6. ____________________

List items that have wheels.

1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________ 6. ____________________

What are the different ways you could light your house?

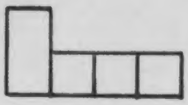
1. ____________________ 2. ____________________
3. ____________________ 4. ____________________
5. ____________________ 6. ____________________

WORD FRAMES (SIMPLE)

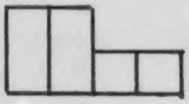
Match the word with its shape. Place the number for the word in the space to the left of the figure or frame shaped like the word.

1. look
2. sun
3. rays
4. bring
5. this
6. apple
7. talk
8. tree
9. window
10. jump

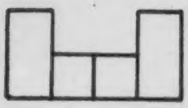
A. ________



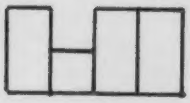
B. ________



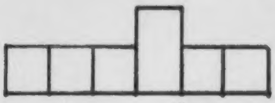
C. ________



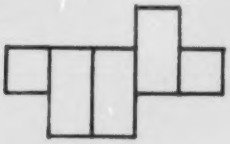
D. ________



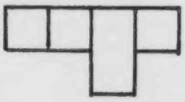
E. ________



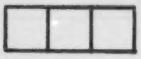
F. ________



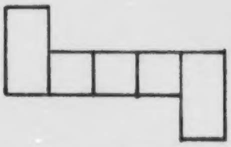
G. ________



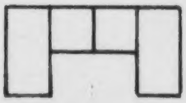
H. ________



I. ________



J. ________

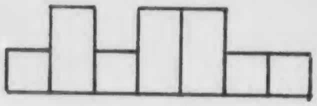


WORD FRAMES (COMPLEX)

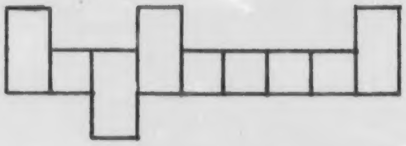
Match the word with its shape. Place the number for the word in the space to the left of the figure or frame shaped like the word.

1. uniformity
2. shallow
3. vacillate
4. fragile
5. haphazard
6. pitiless
7. plausible
8. tapestry
9. intermission
10. knitting

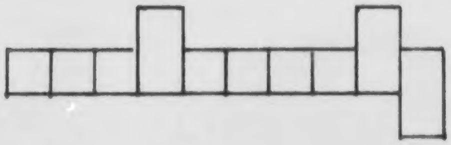
A. ____



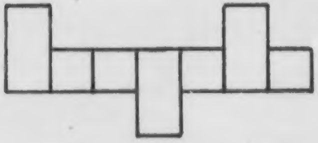
B. ____



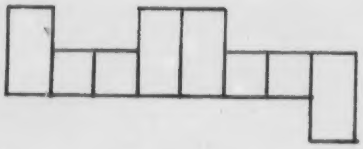
C. ____



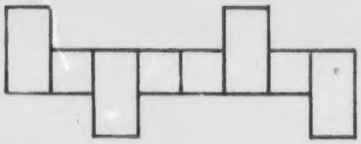
D. ____



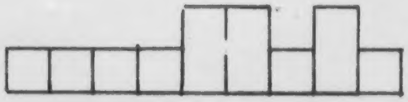
E. ____



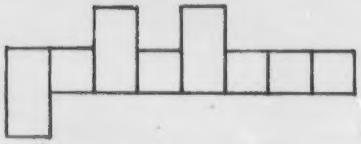
F. ____



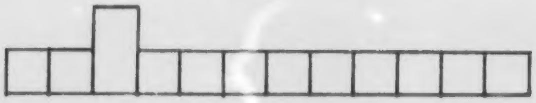
G. ____



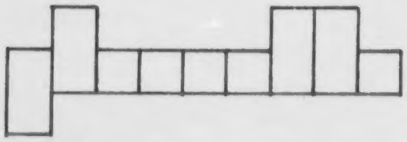
H. ____



I. ____



J. ____

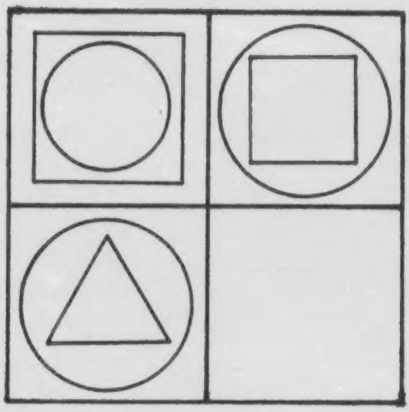


NFR-1

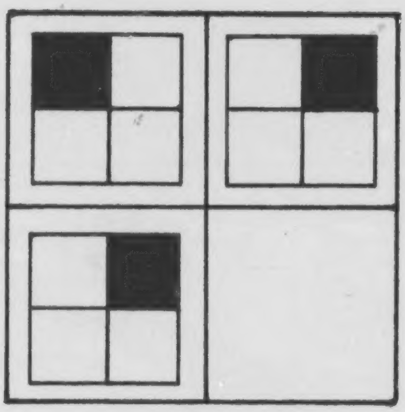
WHAT'S NEXT?

Study the first three drawings in each square to decide what pattern or relationship the figures have; then finish the square by making a drawing of your own that completes the pattern.

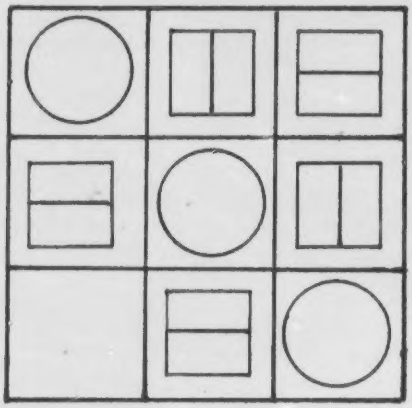
1.



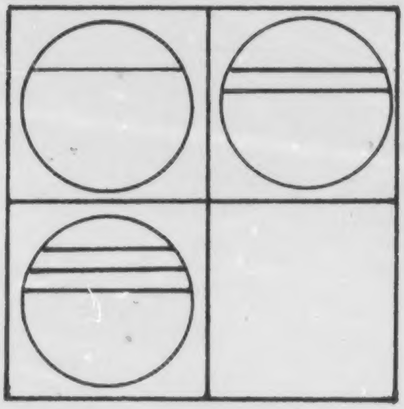
2.



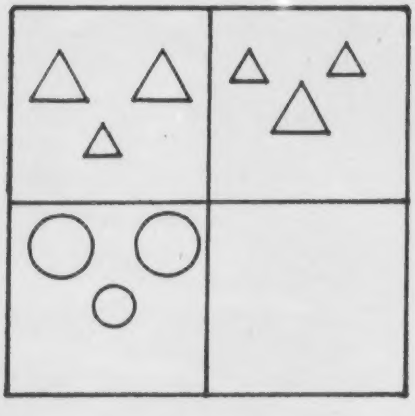
3.



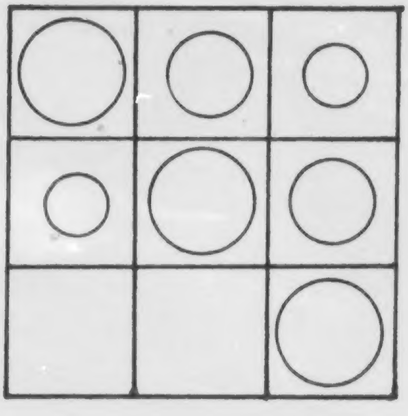
4.



5.



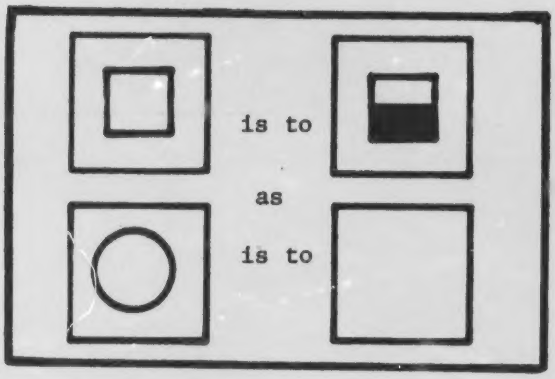
6.



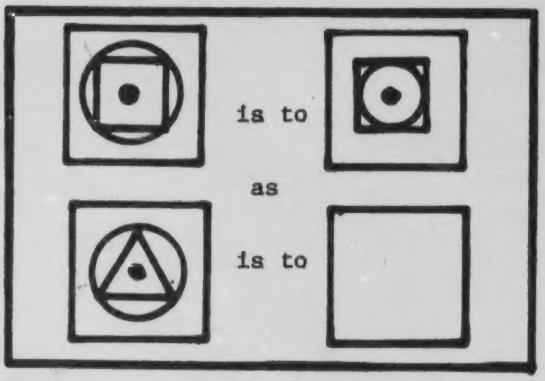
RELATIONSHIPS

How is the first picture in the set related to the second? Once you discover the relationship, complete the second picture set.

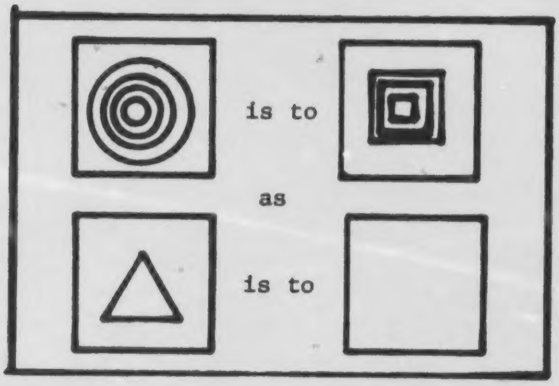
1.


is to
as
is to

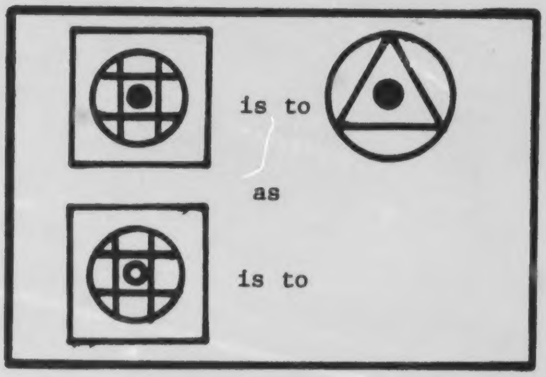
2.


is to
as
is to

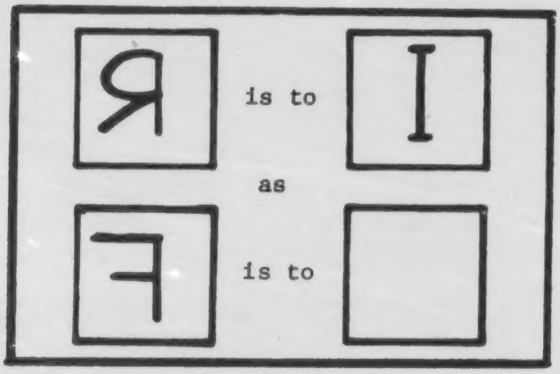
3.


is to
as
is to

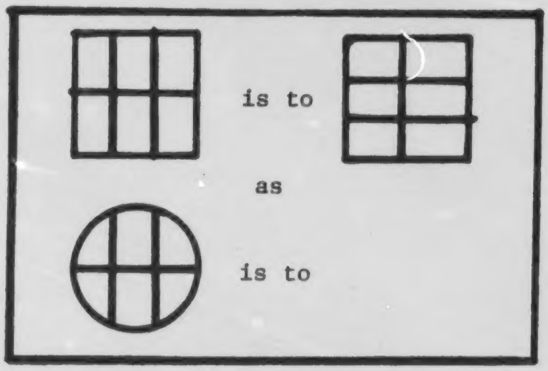
4.


is to
as
is to

5.


is to
as
is to

6.


is to
as
is to

MEASUREMENT

Using two jump ropes, make a small square inside a large square. Hold the ropes tight. Mark each lines with chalk. Measure the squares.

Record your measurements.

Compare measurements with others in your class. What else can you discover by looking at the area?

Record your observations.

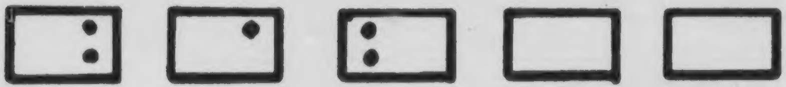
Again using the jump rope and the same procedure, make a triangle in a circle; be sure the corners of the triangle touch the edge of the circle. Measure the sides of each triangle.

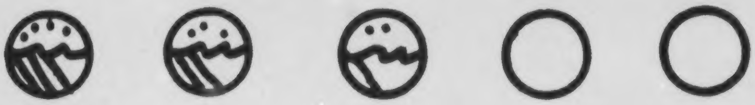
Record your measurements.

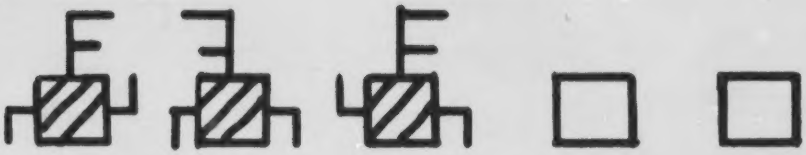
Are the sides of the triangle the same or different lengths?

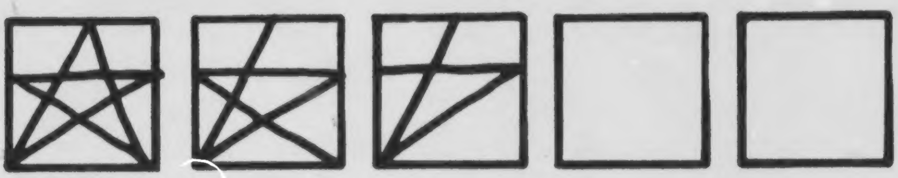
COMPLETE A PATTERN

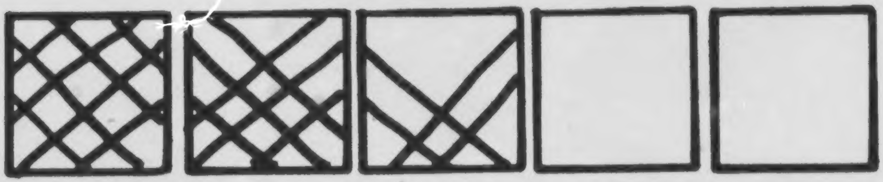
In the series of figures below a pattern has been started. Study the drawings. When you know the pattern, complete the series by filling in the blank areas.

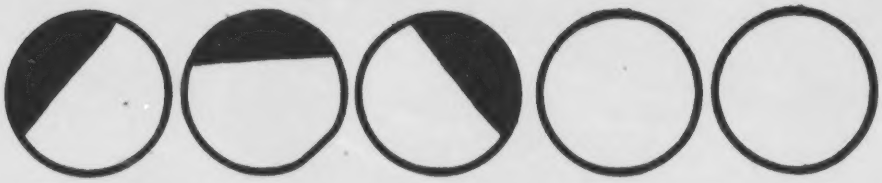
1. 

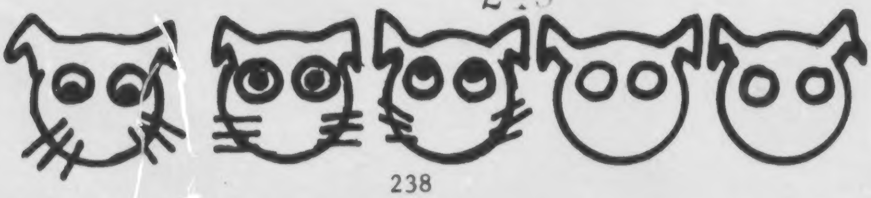
2. 

3. 

4. 

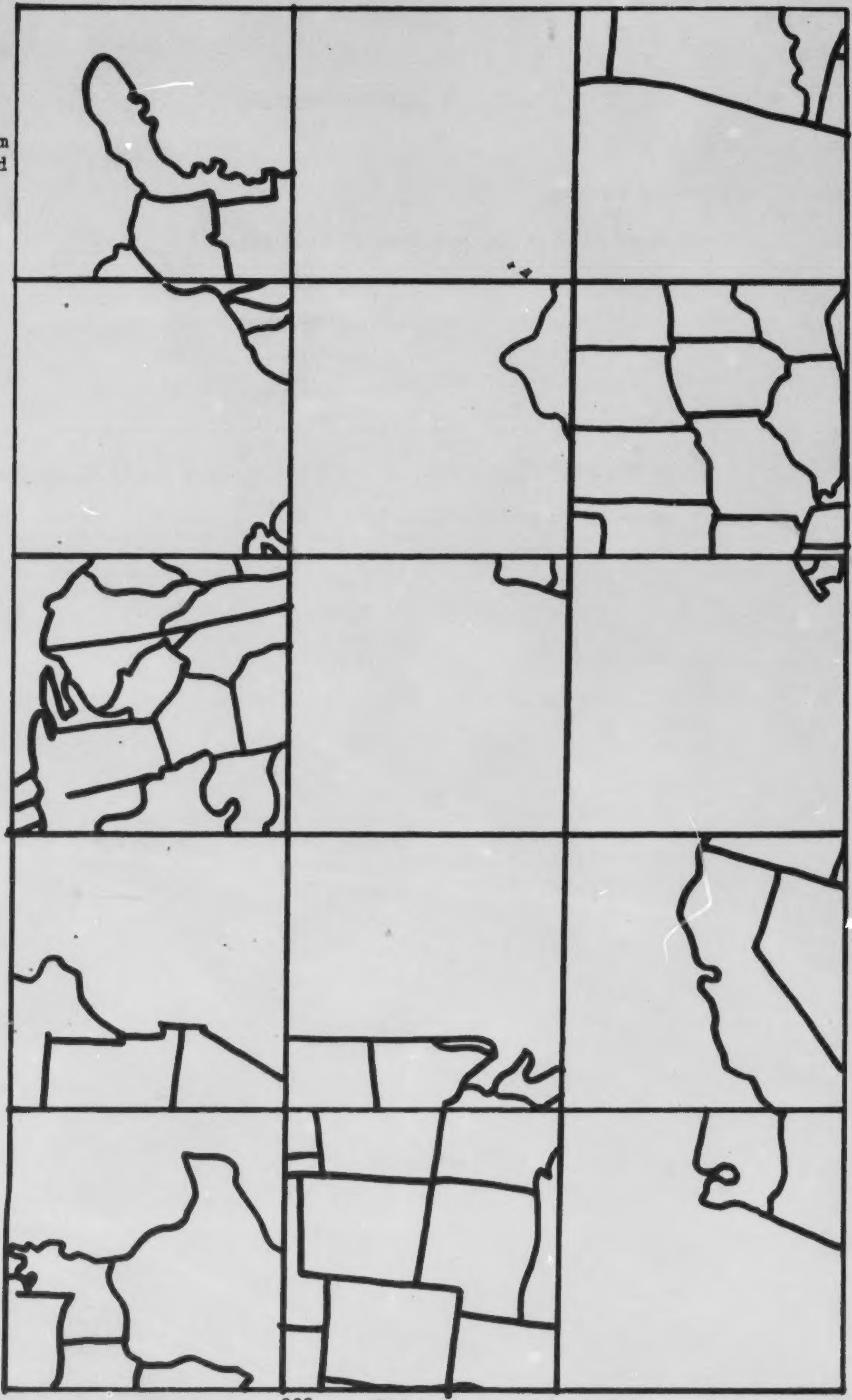
5. 

6. 

7. 

MAP PUZZLE

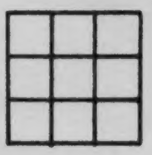
The following squares, when put together in the correct order, form a map of the United States. Cut out the squares and rearrange them to make the map.



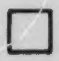
SOLVING PROBLEMS

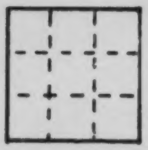
Look before leaping.

How many squares can you find in this figure? __________

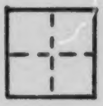


Maybe you said nine. But who said the squares had to be the same size?

In addition to nine squares this size  , isn't there one this size?



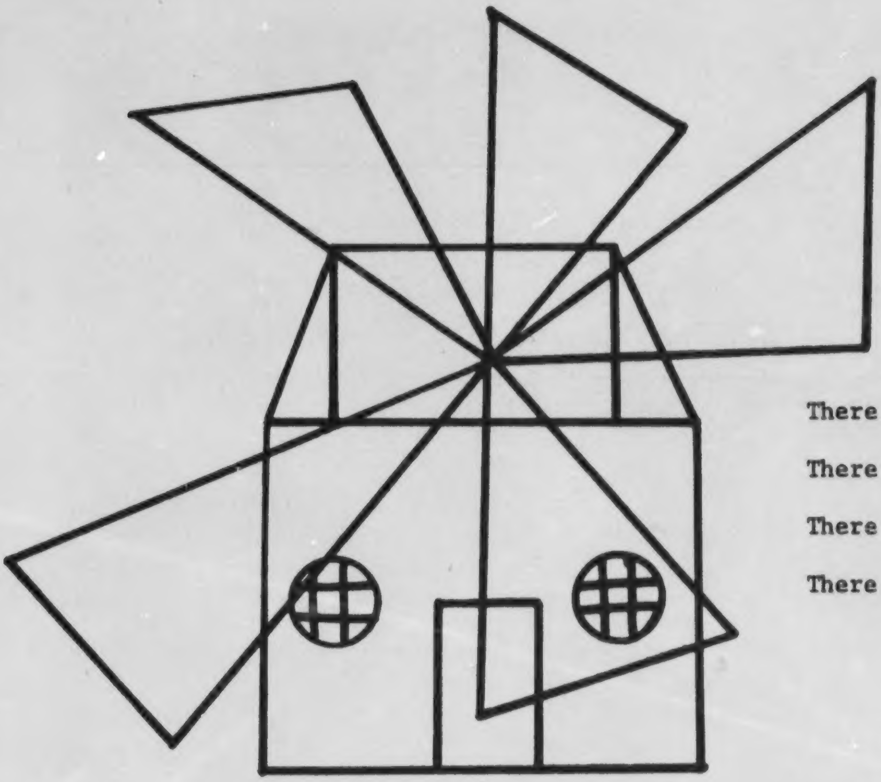
and four more this size?



Which answer is better? Nine squares or 14?

If the best answer to the problem of the squares was not the first one you thought of, don't be surprised. People who take time to think about a problem often find a better solution than the first one. Use the same ways of thinking to solve the problems on the next page.

SOLVING PROBLEMS



There are ______ circles

There are ______ triangles

There are _____ rectangles

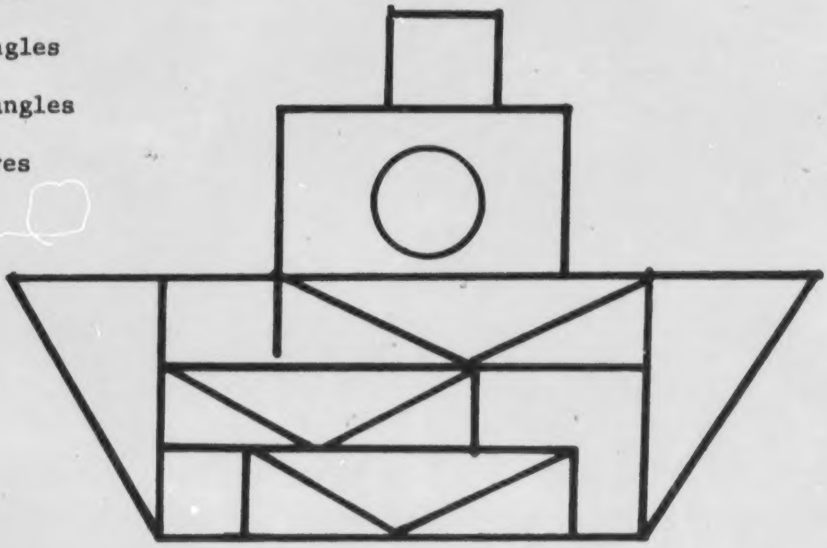
There are ______ squares

There are _____ circles

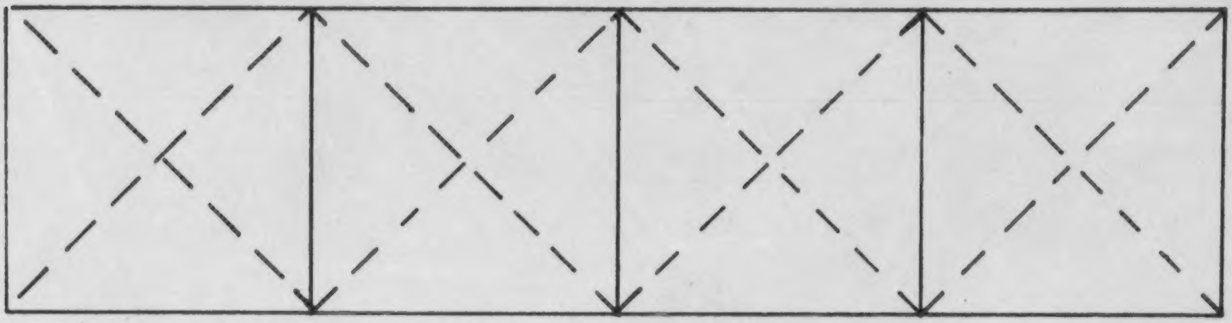
There are _____ triangles

There are _____ rectangles

There are _____ squares



HOW TO MAKE A TETRA-FLEXATUBE



The flexatube is made from a strip of four squares, each of which is ruled into four right triangles. Crease back and forth along all the lines, then tape the ends together to form the cubical tube. The challenge is to turn the tube inside out by folding only on the creased lines.

A durable version can be made by gluing 16 triangles of cardboard or thin metal onto cloth tape, allowing space between the triangles for flexing. It is useful to color only one side of the triangles, so that you can see at all times just what sort of progress you are making toward reversing the tube.

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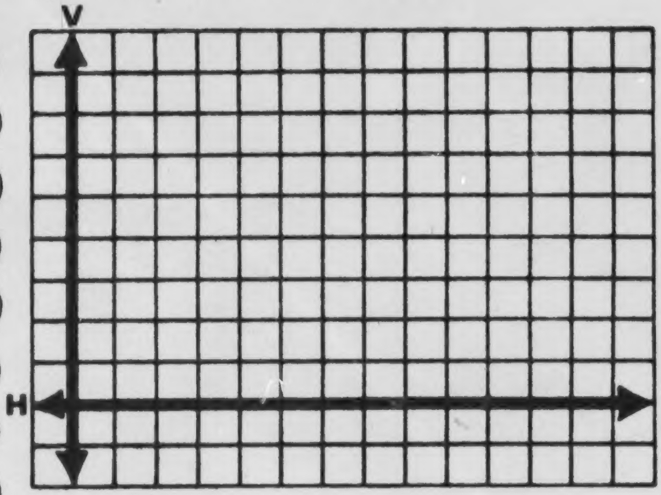
PLOTTING POINTS

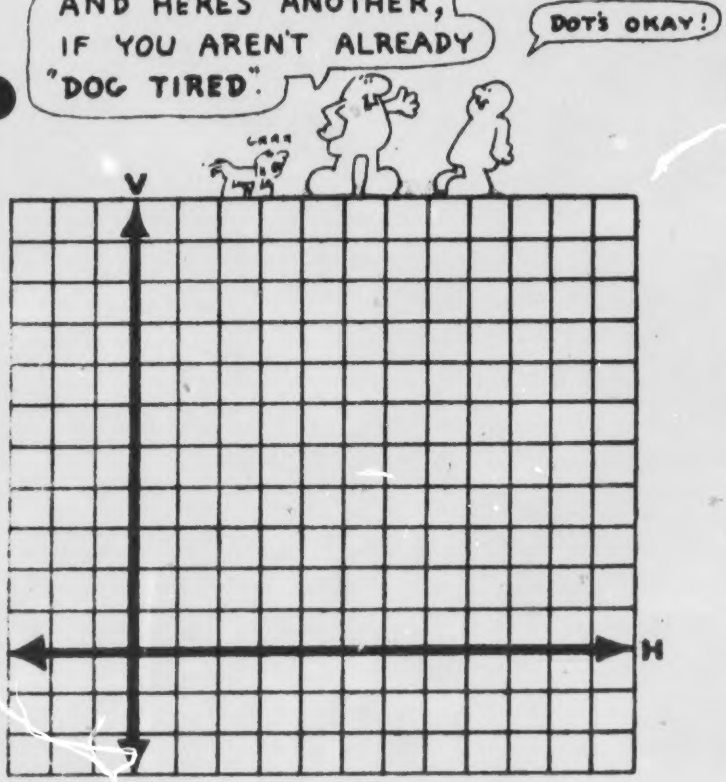
DO YOU REMEMBER HOW TO PLOT POINTS ON A GRID?

PLOT THESE POINTS AND CONNECT A TO B, B TO C, C TO D, ETC.

	(H, V)		(H, V)
A	(1, 3)	G	(7, 4)
B	(2, 3)	H	(9, 4)
C	(2, 4)	I	(9, 3)
D	(5, 4)	J	(13, 3)
E	(5, 6)	K	(11, 1)
F	(7, 6)	L	(2, 1)
		M	(1, 3)



AND HERE'S ANOTHER, IF YOU AREN'T ALREADY "DOG TIRED".



	(H, V)		(H, V)
A	(1, 2)	K	(7, 4)
B	(3, 2)	L	(5, 4)
C	(3, 0)	M	(3, 7)
D	(4, 0)	N	(3, 5)
E	(4, 2)	O	(2, 5)
F	(7, 2)	P	(2, 4)
G	(7, 0)	Q	(0, 4)
H	(8, 0)	R	(0, 3)
I	(8, 5)	S	(2, 3)
J	(7, 5)	T	(1, 2)

OK! SO THESE PICTURES AREN'T WORKS OF ART. WHY DON'T YOU DESIGN A PICTURE? WRITE DOWN THE ORDERED PAIRS AND EXCHANGE WITH A FRIEND.

MAP GAME

Materials Needed

Map gird (See next page.)
Set of playing cards (See below.)
Marker for each player

Rules

You will need to use your map reading skills to play this game.

Each player draws a card in turn and follows the directions on the card. The object is for the player to get his/her marker to outer edge of grid first. The player who does is the winner.

To Make Playing Cards

Type the directions below for playing cards. Use cardboard for backing.

Move 10° North and 20° West

Move 20° South and 10° East

Move 10° North and 10° East

Move 10° North and 10° West

Move 10° South and 10° West

Move 10° South and 10° East

Move 30° South and 20° East

Move 30° South and 20° West

Move 20° North and 20° West

Move 20° North and 20° East

Move 10° North and 10° West

Move 10° North and 10° East

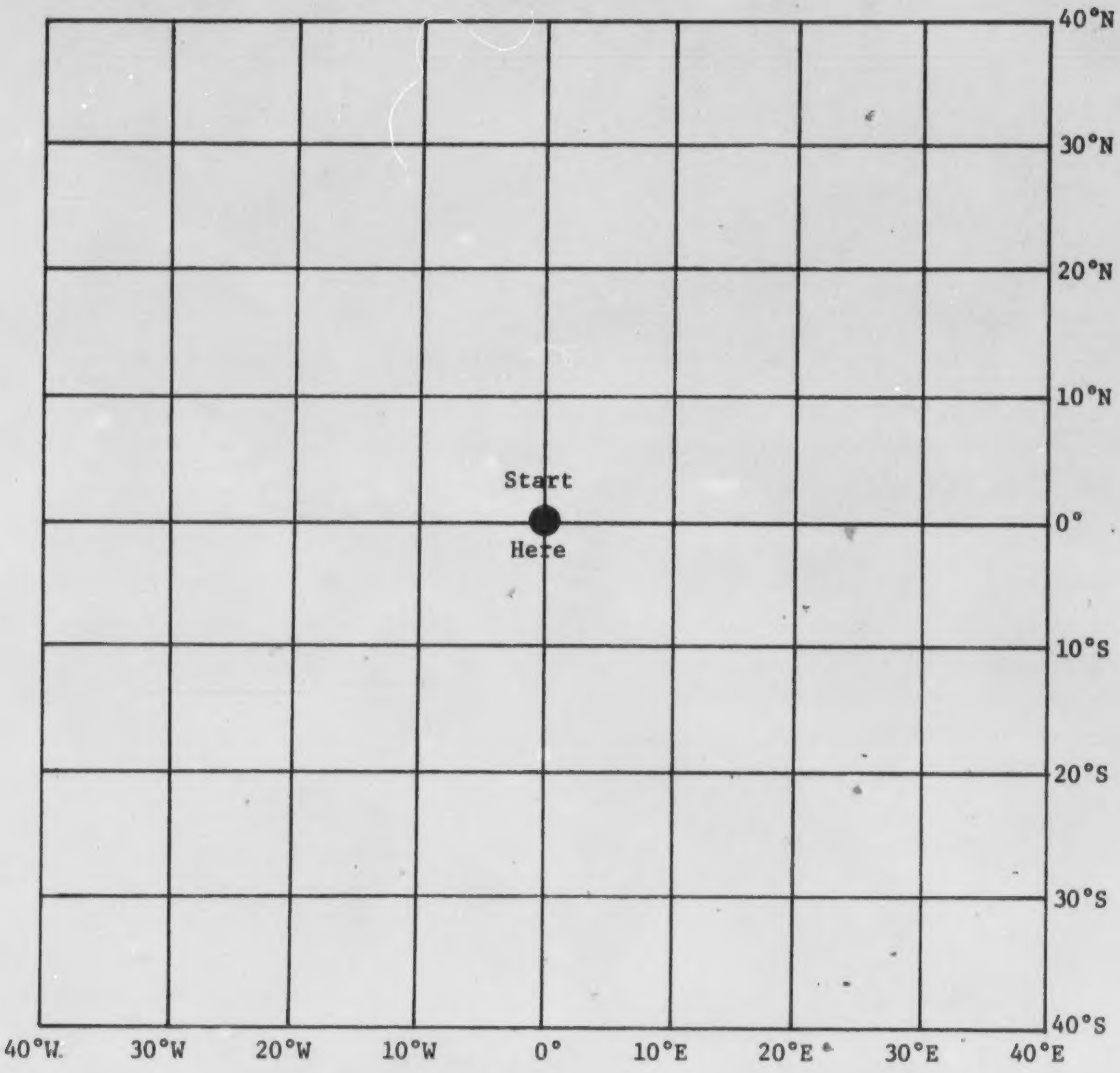
Move 10° South and 10° East

Move 10° South and 10° West

Move 10° East

Move 10° West

MAP GAME GRID


40°N
30°N
20°N
10°N
0°
10°S
20°S
30°S
40°S
Start
Here
40°W
30°W
20°W
10°W
0°
10°E
20°E
30°E
40°E

NONSENSE WORDS

How well can you copy? The "letter" below is made up of nonsense words. See how well you can copy it. Check your words to be sure that you have copied correctly. You might want to time yourself to see how long it takes you. Copy the letters on the lines below each word.

Aeci bcme ccre htvw

htoi ueki mnca te

ffooj Mpgj sru jkui ealm

fohha rvlnpo Cgtse dbpg

nrwy uoiklm Mnjkh behj.

nhb irjh vicre

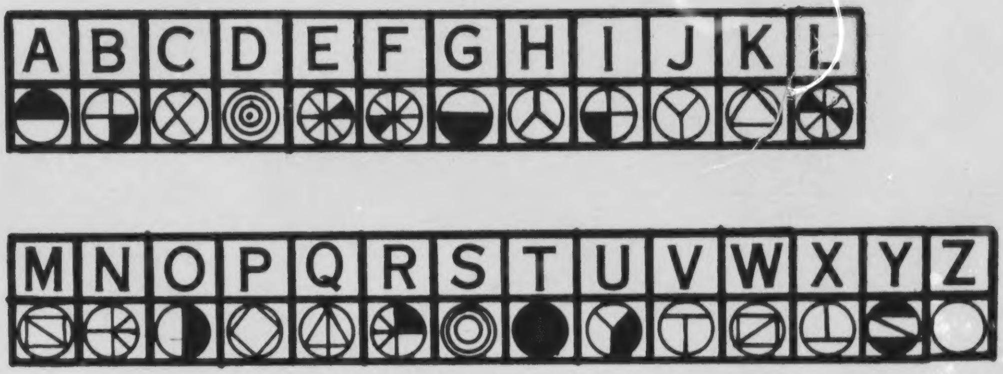
Sneth ifugyea das

uf. Tervg nhdys pehsk

iheionh.

SYMBOLS FOR LETTERS

Each letter below is paired with a symbol. Sometimes the symbols for letters are very similar but still different. In the space below, put the correct symbols with the letters.


A B C D E F G H I J K L
M N O P Q R S T U V W X Y Z

N	E	A	H	U	N	J	Y	Q

B	P	Y	D	K	A	X	N	K	B

C	A	N	Y	O	U	D	O	T	H	I	S

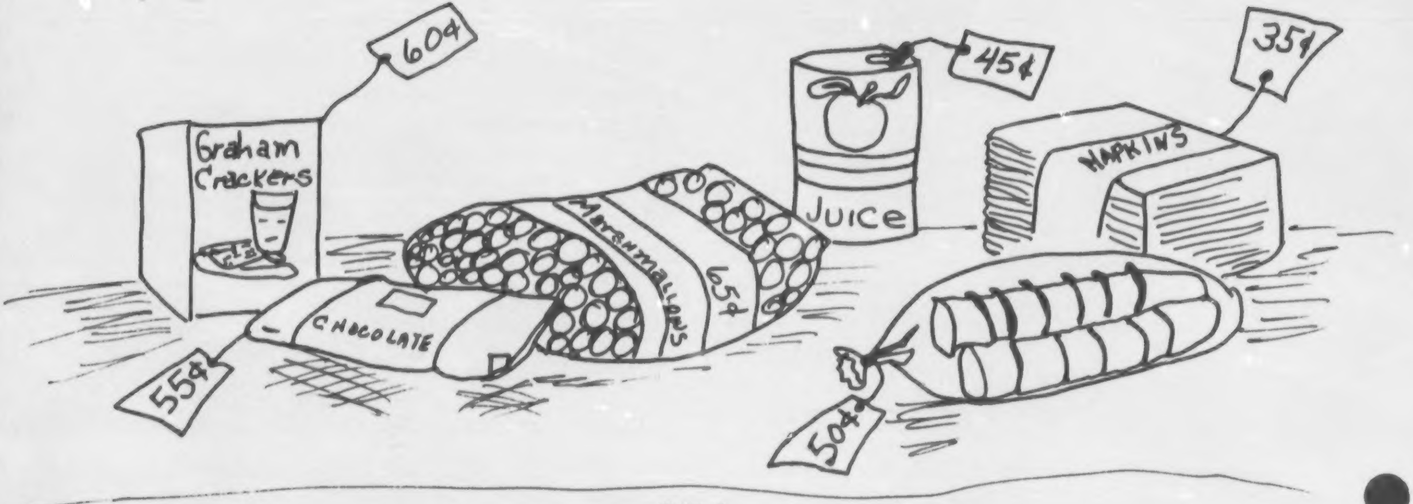
PLAN A PARTY

Below is a list of items you need for your party. At the supermarket you buy the items on the list.

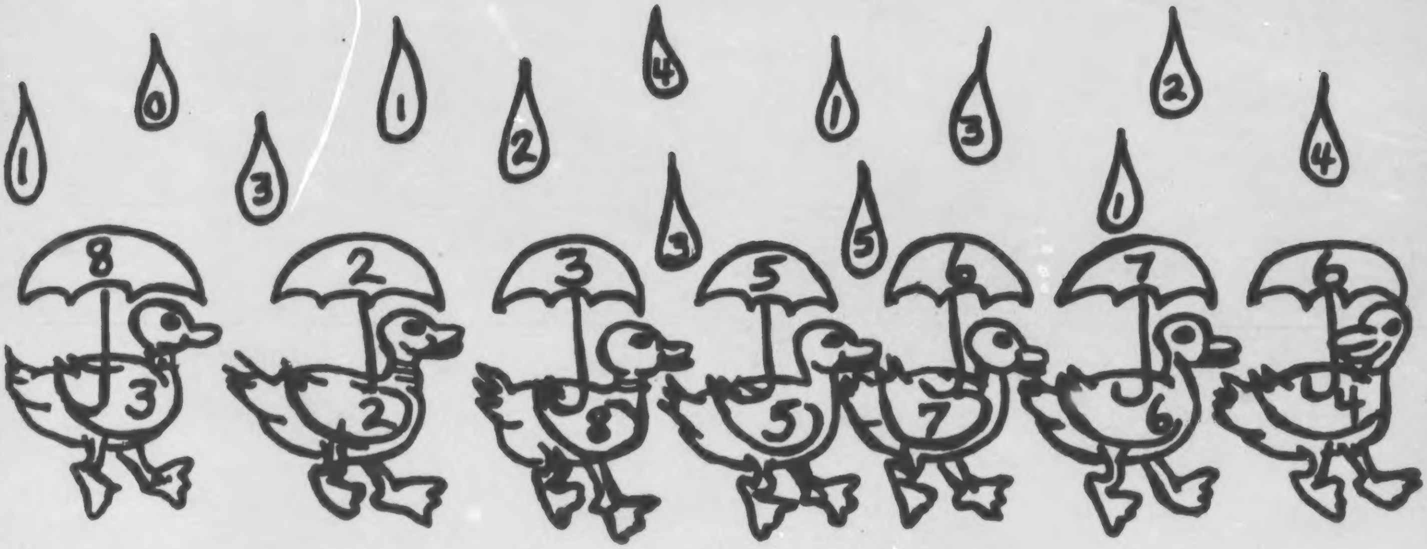
Write down the cost of each item.

What was the total cost for your party.

Graham Crackers
Chocolate
Marshmallows
Juice
Cups
Napkins


60¢
Graham Crackers
Marshmallows
65¢
Juice
45¢
35¢
NAPKINS
CHOCOLATE
55¢
50¢

ADD UP THE NUMBERS!


1
0
3
1
2
4
3
1
5
3
1
2
4
8
2
3
5
6
7
6
3
2
8
5
7
6
4

The raindrops = ________

The umbrellas = ________

The ducks = ________

Total ________ + ________ + ________ = __________

The raindrops and umbrellas = ________ + ________ = __________

The umbrellas and ducks + ________ + ________ = __________

How Much Does THIS Garden Grow?

Add up each flower!

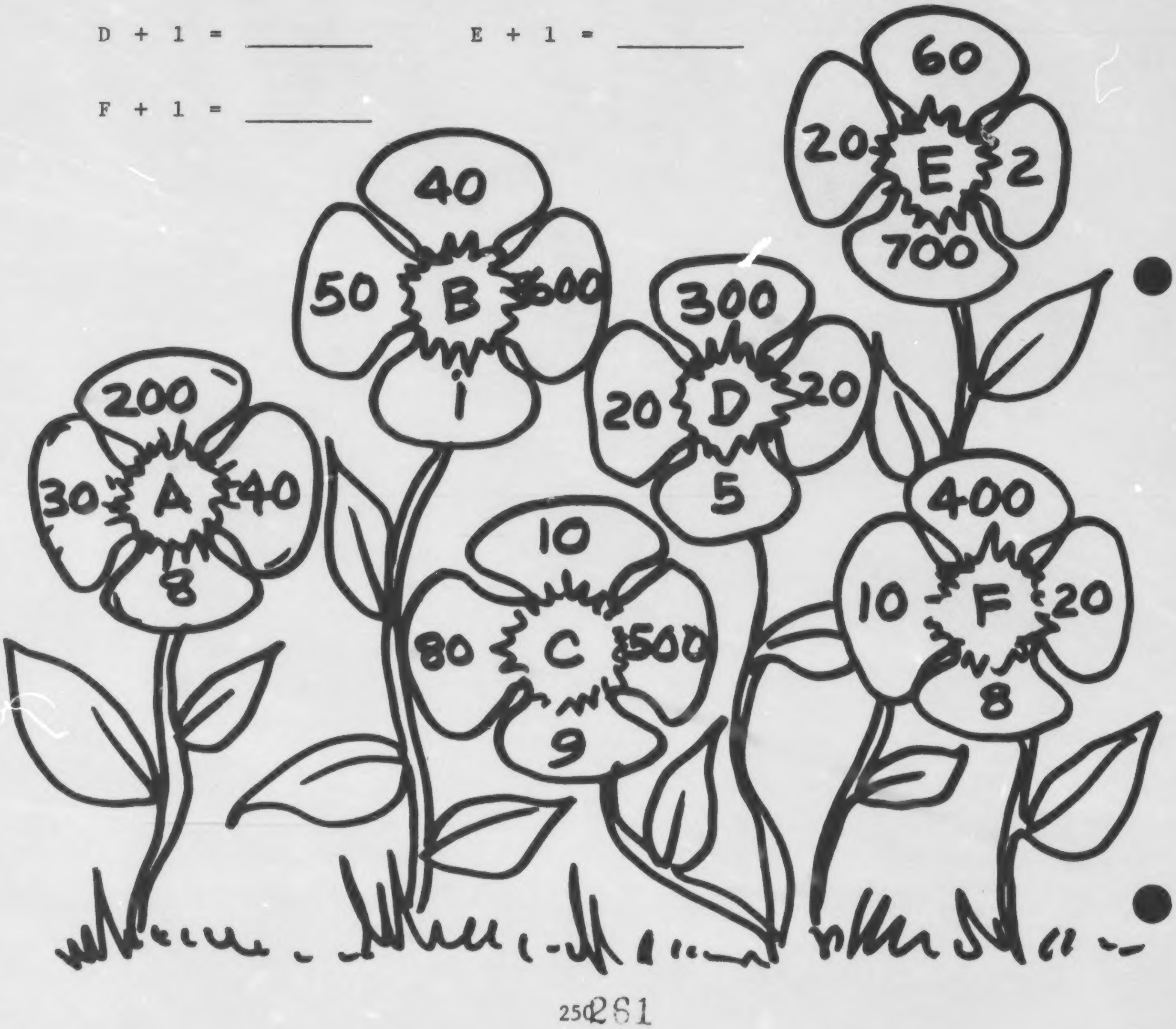
A = ________ D = ________ B = ________

E = ________ C = ________ F = ________

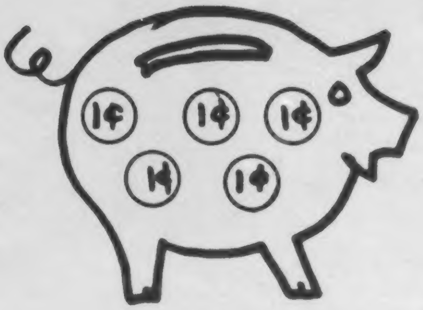
A + 1 = ________ B + 1 = ________ C + 1 = ________

D + 1 = ________ E + 1 = ________

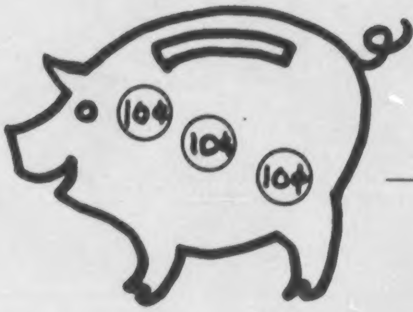
F + 1 = ________


60
20
E
2
700
40
50
B
500
1
300
20
D
20
5
200
30
A
40
8
10
80
C
500
9
400
10
F
20
8

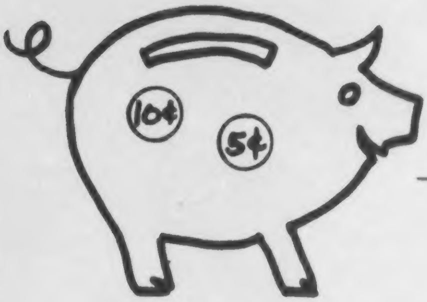
HOW MUCH MONEY IS IN EACH PIGGY BANK?



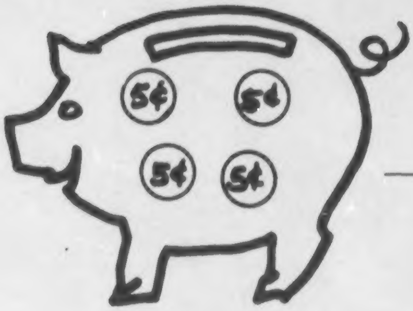
______ ¢



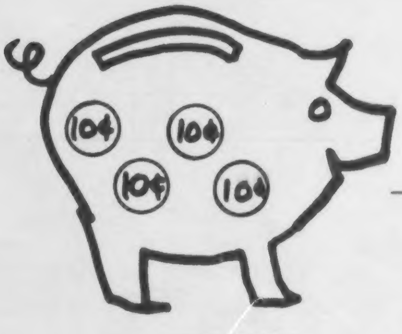
______ ¢



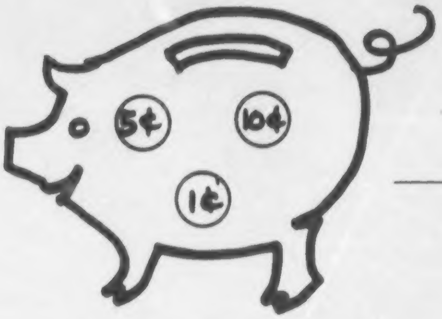
______ ¢



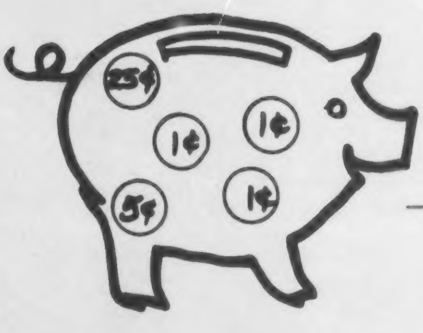
______ ¢



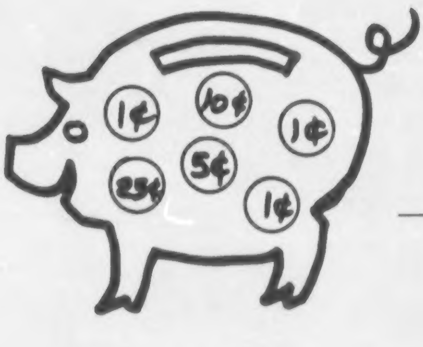
______ ¢



______ ¢

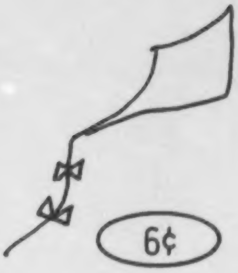


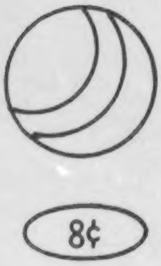
______ ¢

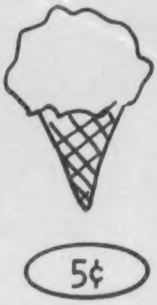


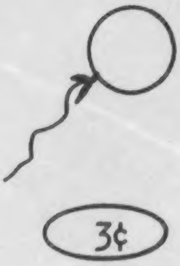
______ ¢

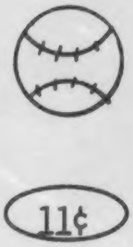
WHAT WOULD YOUR CHANGE BE?

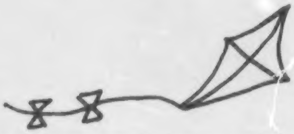
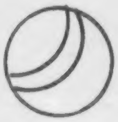
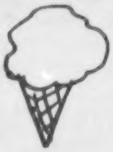
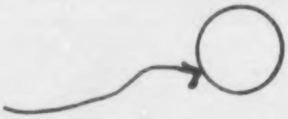
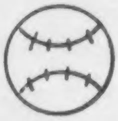
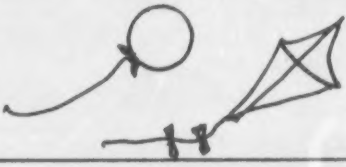










You buy:	You pay:	You get back:
	10¢	
 	10¢ 10¢	
	5¢	
	10¢ 5¢	
	5¢ 5¢	

NSU-8

HOW MUCH IS A WORD WORTH?

Use this code:

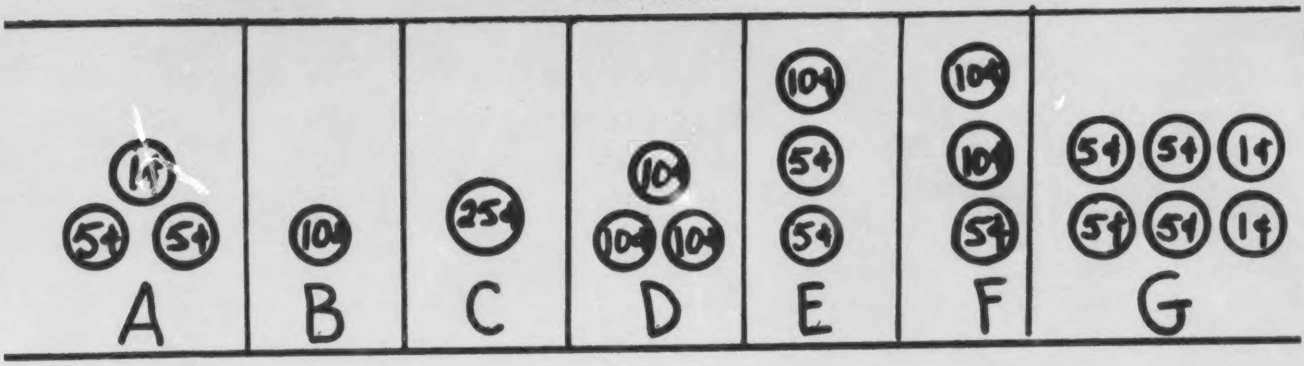
A	B	C	D	E	F	G	H	I	J
1¢	2¢	3¢	4¢	5¢	1¢	2¢	3¢	4¢	5¢
K	L	M	N	O	P	Q	R	S	T
1¢	2¢	3¢	4¢	5¢	1¢	2¢	3¢	4¢	5¢
U	V	W	X	Y	Z				
1¢	2¢	3¢	4¢	5¢	1¢				

Add up these words.

1. Love = 2¢ + 5¢ + 2¢ + 5¢ = 14¢
2. Your name = ________________
3. Your last name = ________________
4. Your teacher's name = ________________
5. Your mom's name = ________________
6. Your dad's name = ________________
7. Favorite food = ________________
8. The days of the week = ________________

How many 25¢ words can you think of?

BE MONEY WISE


1¢
5¢
5¢
A
10¢
B
25¢
C
10¢
10¢
10¢
D
10¢
5¢
5¢
E
10¢
10¢
5¢
F
5¢
5¢
1¢
5¢
5¢
1¢
G

A = _____¢ B = _____¢

C = _____¢ D = _____¢

F = _____¢ G = _____¢

Set _____ has the most money

Set _____ has the least money

Set C = Set _____

A > _____ F < _____

A + B = _____¢ B + C = _____¢

D + E = _____¢ A + E = _____¢

C + G = _____¢ E + C = _____¢

A - B = _____¢ D - C = _____¢

MEASUREMENT

Use a piece of roving about 1 meter long to measure and record:

Around your waist ______________________________

Around your friend's waist ______________________________

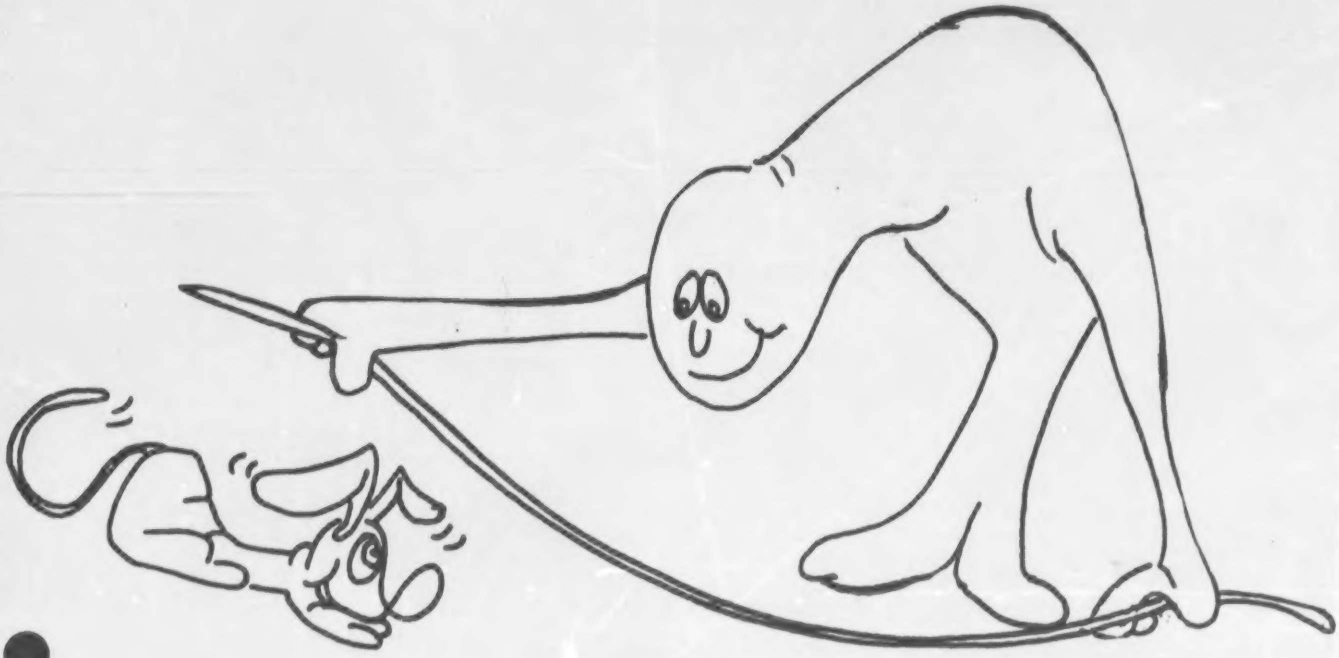
From floor to top of your head ______________________________

From floor to top of your friend's head ______________________________

The width of the span of your arms ______________________________

The length of your foot ______________________________

Your best friend's smile ______________________________



NSC-1

FIND THE COST OF ONE

1. If bananas sell for 60 cents a dozen, how much will 7 cost?
2. Robert reads the same number of pages in a book each day. In 3 days he read 54 pages. How many pages would he read in 7 days?
3. If 5 apples cost 25 cents, how much will 17 apples cost?
4. If 4 yards of silk cost $4.48, what will 3 yards cost?
5. If a dozen eggs cost 60 cents, how much will 9 eggs cost?
6. In 4 days Tom eats 18 slices of bread. How many slices does he eat in 5 days?
7. If 15 books cost $90, how much will 18 books cost?
8. If 3 city blocks are 1020 feet long, how far does a boy go when he skates 13 blocks?
9. If 8 pieces of cloth measure 56 feet, how long would 9 pieces be?
10. If 18 pieces of cloth contain 630 yards, how many yards would there be in 15 pieces?
11. If 3 crates of eggs contain 90 dozen eggs, how much will 5 crates contain?
12. If 5 yards of material cost $9.20, how much would 12 yards cost?
13. If 13 people in the class paid $16.25 for lunches, how much would 33 people pay?
14. If you cut 6 top strings out of 9 yards, how many yards would it take for 11 strings?
15. If Mary used 27 buttons on 3 dresses, how many buttons would she use on 2 dresses?
16. If 4 crates of strawberries contain 96 boxes, how many boxes will 6 crates hold?
17. If there are 36 beets in 4 bunches, how many beets would there be in 10 bunches?
18. If 6 bunches of asparagus cost $2.10, how much would 15 bunches cost?
19. If the clothes for 8 boys cost $54, how much would clothes for 7 boys cost?
20. If 8 sleds cost $88.64, how much would 5 sleds cost?

PRODUCTS

This game gives you a chance to practice your multiplication skills.

Level

Grades 3-6

Number of Players

Two to four

Materials Needed

Small pieces of colored paper
Playing board

Object

To cover the most products on the board with a player's color

How to Play

Each player chooses a color. The players take turns rolling one die. The player must cover a multiple of the number s/he rolls with her/his color. When all products are covered the game is over. The winner is the player who has the most products covered. If a player cannot find a multiple of her/his number on the board s/he may pass.

Variation

This game can also be called "Sums" and can be used as an addition game with smaller numbers.

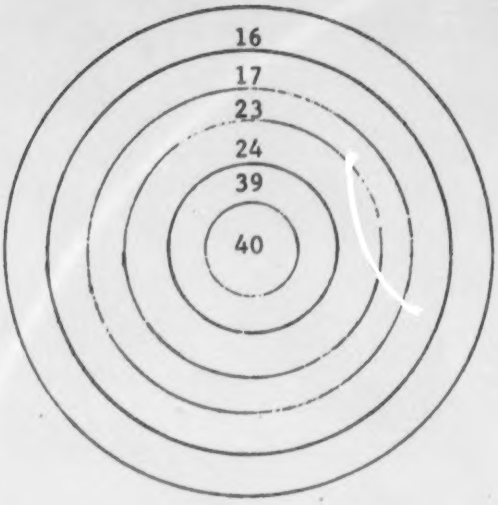
48	6	81	32	60	56
3	18	44	5	42	35
25	22	54	63	21	55
16	36	10	45	2	64
27	7	4	72	20	8
15	9	14	24	77	30

YOU DO IT

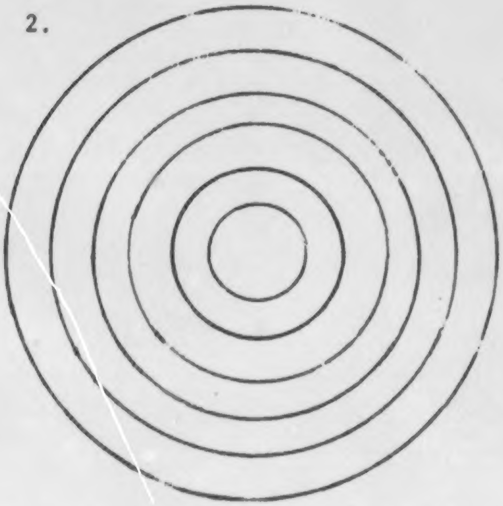
Directions	Example	You Do It
Write any three figures so that they decrease by one from left to right. Reverse the number. Subtract the smaller from the larger. Your answer will always be 198.	543 345 543 - 345 198	
Write any number you wish Add 5. Multiply by 3. Subtract 9. Divide by 3. Subtract your original number. Your answer will always be 2.	8 5 + 8 = 13 13 x 3 = 39 39 - 9 = 30 30 ÷ 3 = 10 10 - 8 = 2	
Write any three figures. Reverse the number. Subtract the smaller from the larger. Reverse the answer. Add to original answer. Your answer will always be 1089.	421 124 421 - 124 297 792 + 297 1089	
Write any number three times. Add the three figures. (6 + 6 + 6) Multiply by 37. Your answer is the first number you wrote.	666 18 37 x 18 = 666	
Write any number with four figures. Reverse the number. Subtract the samller from the larger. Your answer can always be evenly divided by 9.	4362 2634 4362 - 2634 1728	

MATH BRAIN TEASERS

1.



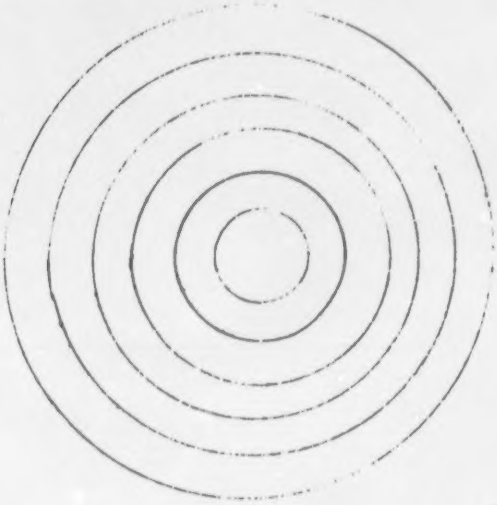
2.



1. In order to score 100 on the dart board above, how many darts must you use? Where will your darts land?

2. The winner scored 100 points with 6 darts. There was only one dart in each ring. The score on each ring is a multiple of 5. No number was repeated. What numbers go in the other rings if the number in the center ring is 50?

3.



3. The winner scored 100 points with 6 darts. The number in one ring was twice the number in one of the other rings. The number in another ring was three times the number in one of the other rings. What numbers go in the other rings if the center ring is 40 and you have only one dart in each ring when you score 100 points?

MAGIC SQUARE

Place the numbers 1 - 9 in the squares so they add up to 15 in all directions.

CODES AND CIPHERS

Some secret messages are called codes while others are called ciphers. In a code a group of letters or a word may have a secret symbol such as:

S = Secret SS = Secret Spy

A cipher is different; each letter in a cipher has a symbol such as:

SECRET
573178

c	e	r	s	t
3	7	1	5	8

Some messages can be found hidden or may be scrambled into another message.

Try solving the following ciphers and codes. You may wish to make up some of your own for your friends to solve.

1. Here is the key for a cipher.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38

T	U	V	W	X	Y	Z
40	42	44	46	48	50	52

Use the key to decipher this message:

4 - 10 - 46 - 2 - 36 - 10 30 - 12 38 - 10 - 6 - 36 - 10 - 40

6 - 30 - 8 - 10 - 38

2. Here's another way to send a message.

c anyo uf indt heme ssa ge

3. This one is fun, too.

W	Y	D	A	D	E
H	A	O	E	T	D
I	W	Y	R	H	O
C	H	O	U	E	C

4. Or how about a scramble?

TASWE OTN NAWT TNO

CODES, CRYPTOGRAMS, AND CIPHERS

See if you can break these messages.

1. This cipher needs this phonetic alphabet to be broken:

a = ay
b = be
c = see
d = dee
e = ee
f = ef
g = jee
h = atech
i = aye
j = jay
k = key
l = el
m = em
n = en
o = oh
p = pea
q = cue
r = or
s = es
t = tea
u = ewe
v = vee
w = dubleu
x = ex
y = why
z = zee

Eeayeswhy, ayees ayetea enohtea?

2. Look closely and you'll solve this one:

I fyo ure allykno who wtose einn eww aysyo urprob lemiss olv ed.

3. Don't go off in the wrong direction for this one:

Edam ti evah uoy, flesruoy esrever uoy fi.

4. This is a cryptogram, so code letters are substituted for the correct letters.

It is part of a famous rhyme. Clue: v stand for a
s stands for j

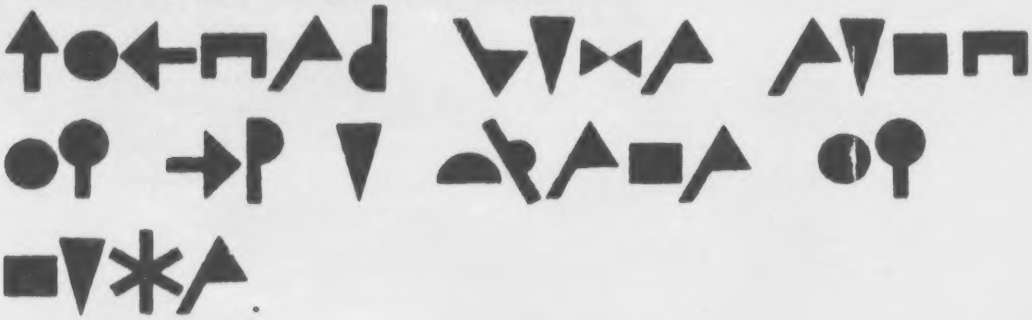
svpl at cnoaht
svpl at xfnpl
svpl kfoy mbtu
idt pvcrht qinpl

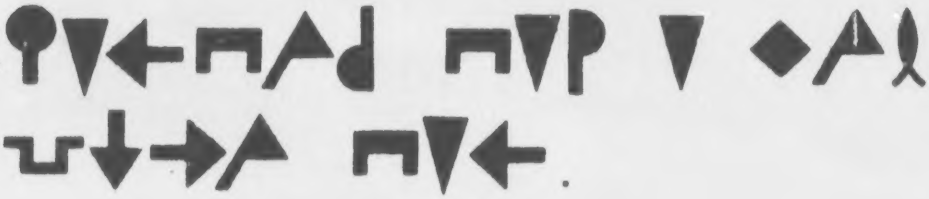
5. Try to decipher this:

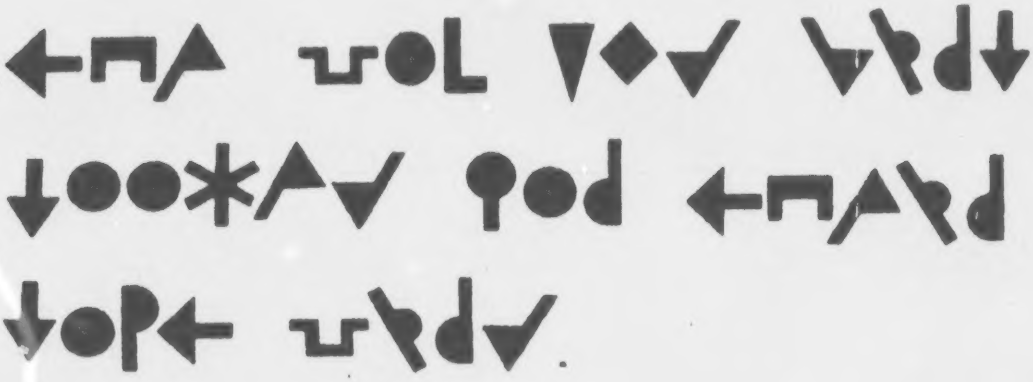
Y Y U R Y Y U B I C U R Y Y 4 me.

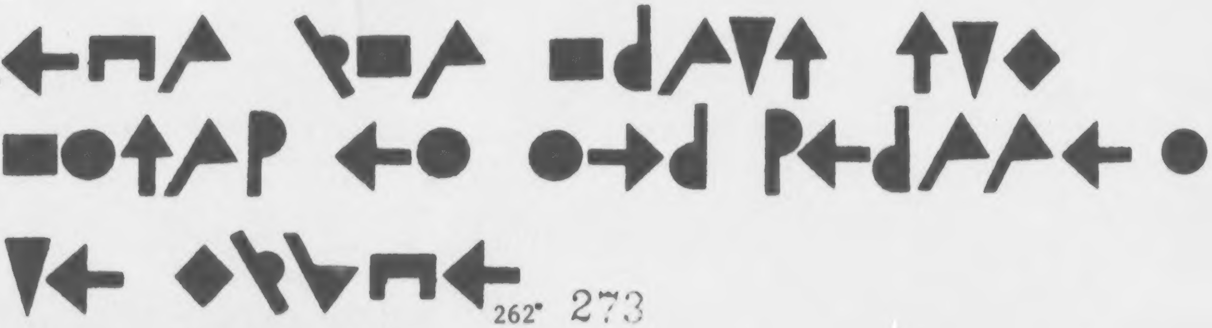
WHAT DO THESE SYMBOLS MEAN?

Use the code on the next page to help you.

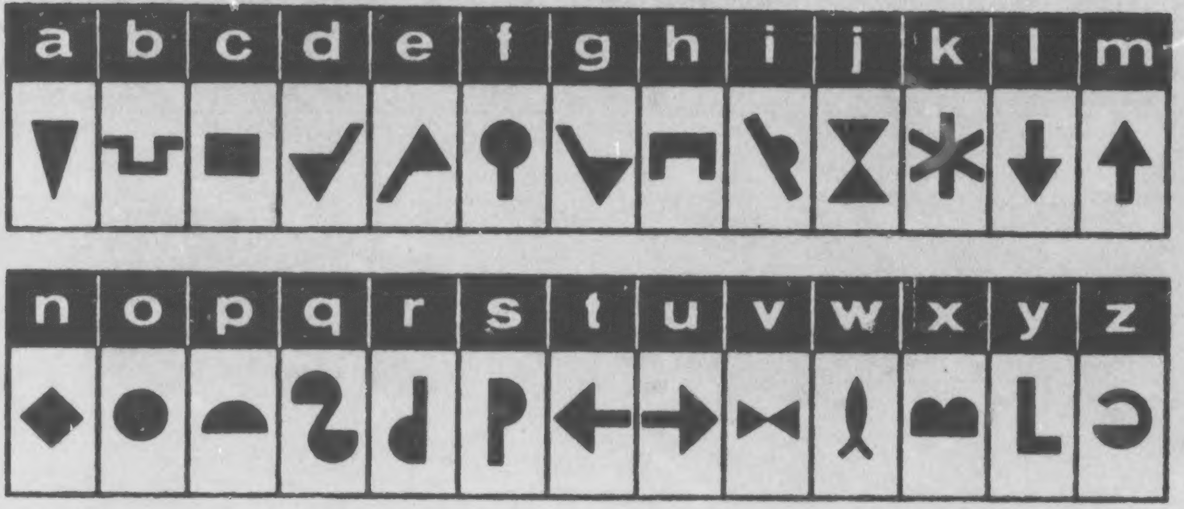
1.


2.


3.


4.


WHAT SENTENCE CAN YOU WIRTE WITH THESE SYMBOLS?


a b c d e f g h i j k l m
n o p q r s t u v w x y z

Sentence ____

____

____

____

____

____

____

____

____

____

____

CODED MESSAGES

Directions

Fill in the blanks in front of the letters to "crack" the code. Then make up your own coded messages.

____ A = (9 x 11) + 2

____ B = 9 x 9

____ C = 5 x 8

____ D = 100 ÷ 10

____ E = 48 ÷ 12

____ F = 6 x 8

____ G = 7 x 4

____ H = 10^2

____ I = 12 x 8

____ J = 8 + 9

____ K = 16 ÷ 2

____ L = 21 ÷ 3

____ M = 7 x 3

____ N = 8 x 7

____ O = 5 x 7

____ P = 35 ÷ 7

____ Q = (14 x 1) - 11

____ R = 40 ÷ 2

____ S = 8 x 9

____ T = 6 x 6

____ U = 4 x 0

____ V = 63 - 62

____ W = 5 x 3

____ X = 27 ÷ 3

____ Y = 36 ÷ 6

____ Z = 2 x 11

Message:

6-35-0 ____ 101-20-4 ____ 20-4-101-7-7-6 ____ 72-5-4-40-96-101-7 ____ 96-48 ____ 6-35-0 ____

48-96-28-0-20-4 ____ 36-100-96-72 ____ 35-0-36 ____

________ A

________ B

________ C

________ D

________ E

________ F

________ G

________ H

________ I

________ J

________ K

________ L

________ M

________ N

________ O

________ P

________ Q

________ R

________ S

________ T

________ U

________ V

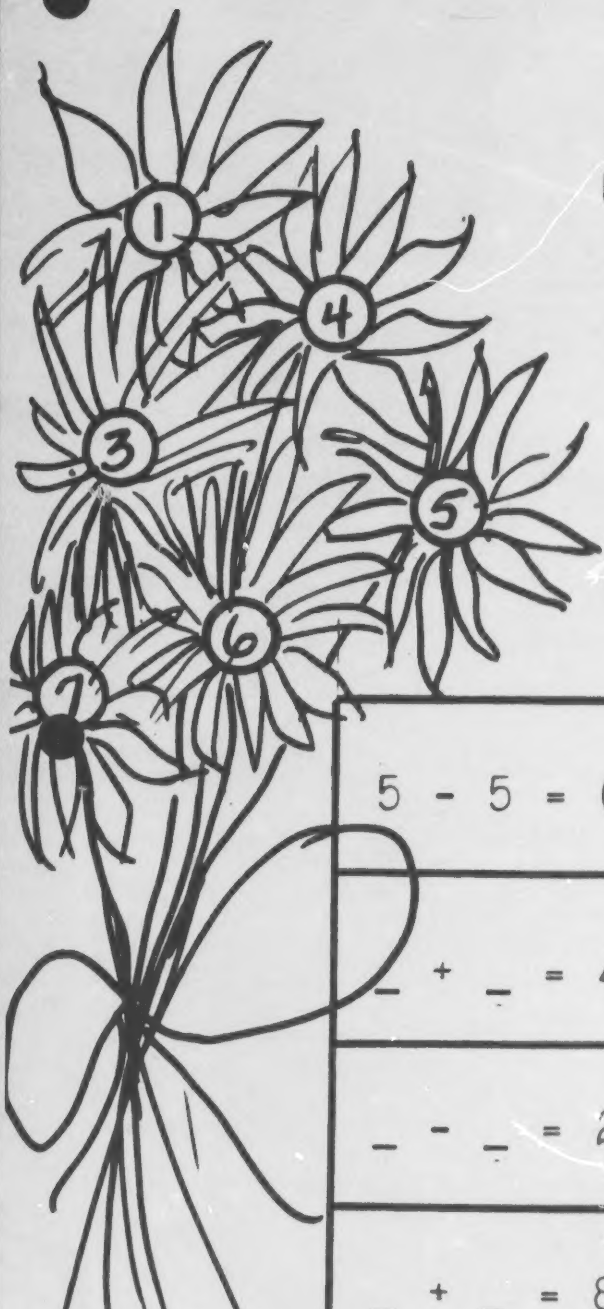
________ W

________ X

________ Y

________ Z

Write message here:



Use the numbers on the flowers to complete these number sentences...

5 - 5 = 0	1 + 4 = 5	_ + _ = 8
_ + _ = 4	_ + _ = 7	_ + _ = 11
_ - _ = 2	_ - _ = 3	_ - _ = 6
_ + _ = 8	_ + _ = 10	_ - _ = 3
_ - _ = 3	_ + _ = 12	_ + _ = 9

PLAN A PARTY

A party always has good food. Some Mores are fun to make and good to eat. To make one you need:

2 square graham crackers
4 squares of a chocolate bar (usually 1/2 of a small bar)
1 melted marshmallow

If you plan to have ten people at your party and you plan for each person to have two Some Mores, how much will you need to buy? Answer the question below to find out.

How many graham crackers will be needed? ______________________________

How many marshmallows will you need? ______________________________

What fraction of a chocolate bar is needed for one Some More? __________

How many chocolate bars will you need altogether? ______________________

ALPHABETICAL ORDER

Place the following words in alphabetical order. Each group should be alphabetized separately.

A. come 1.____________________
code 2.____________________
cone 3.____________________
comb 4.____________________

B. mean 1.____________________
metal 2.____________________
medal 3.____________________
meal 4.____________________

C. anger 1.____________________
always 2.____________________
alter 3.____________________
abide 4.____________________

D. beach 1.____________________
bird 2.____________________
brother 3.____________________
bottle 4.____________________

E. naughty 1.____________________
noise 2.____________________
nice 3.____________________
novel 4.____________________

F. leaves 1.____________________
leap 2.____________________
leather 3.____________________
leaving 4.____________________

G. street 1.____________________
straight 2.____________________
stream 3.____________________
strap 4.____________________

H. weight 1.____________________
weightless 2.____________________
weight 3.____________________
weighted 4.____________________

A WORD CHAIN

Starting with the key word make a new word by changing only one letter. The next person may now change any one letter to make a new word. See how many different words you can make.

Example

LANE	LIFE	TAKE	RACE	FINE
LONE				
LOSE				
LOST				
COST				
CAST				
CANT				
CANE				
SANE				
SAND				
BAND				

MISSING WORDS

Find all possible words within the squares of this puzzle. Move up, down, sideways, or diagonally. The same letter square may be used twice in the same word if another letter is used in between. In the example below, the letter "D" is used twice in the word "dead," but "E" and "A" are used between.

S	A	M	A	B
E	D	N	E	D
R	C	S	T	O
M	A	N	I	N
E	L	I	P	U

NSS-5

HIDDEN SENTENCES

Move from square to square, either up or down, or from side to side (not diagonally) to find the hidden sentence in each diagram.

Example

1. Start with S

O	T	S
O	E	U
K	I	T

2. Start with I

M	R	D	E
A	O	F	K
R	A	I	O
T	H	L	O

3. Start with W

W	O	E	T	W
S	H	P	A	E
E	H	O	P	C
G	T	U	D	O
N	I	R	N	R

TWO DOWN, TWO TO GO

Below are listed the initial and final letters of some four-letter words. List as many words as possible that begin and end with the given letters.

1. L - - P

______

______

______

2. N - - E

______

______

______

3. R - - G

______

______

______

4. P - - 1

______

______

______

5. M - - T

______

______

______

6. C - - N

______

______

______

7. F - - D

______

______

______

8. D - - E

______

______

______

9. B - - N

______

______

______

10. G - - N

______

______

______

WORD WITHIN A WORD

Each of the words below has at least one word hidden in it. Circle the words you find within each word.

1. emotional
2. disarm
3. courageous
4. nobleman
5. concentrate
6. carbonated
7. castanet
8. eyelet
9. latchkey
10. phosphorescent
11. shipment
12. deformity
13. partisan
14. broadsword
15. centimeter
16. knowledge
17. cowardly
18. bright
19. condiment
20. killdeer

MAKE A WORD

What other words can you make from the following words by changing the arrangement of the letters?

Example

read dear dare

1. dater

2. dowery

3. dale

4. large

5. there

6. kids

7. nears

8. grab

9. tubs

10. name

11. plead

12. begin

13. made

14. realist

15. painters

Activities have not been provided for the cell NSI. This cell is best remediated through the teacher's own math program in the classroom. The *SOI Abilities Workbook* on Convergent Production (under the cell NSI) presents a diagnostic mathematics test which teachers may choose to use.

CONTRACTIONS

Contractions are two words that have been shortened to make one word. An apostrophe (') is used in place of the letter(s) that have been left out. For instance "I will" may be shortened to "I'll." In the following exercise change the words in parentheses to contractions.

Dear Pat,

(We have) 1. ____________ been enjoying our vacation in the mountains. You (would not) 2. ____________ believe the beautiful rivers and forests that (we have) 3. ____________ seen here. (I would) 4. ____________ like to stay here longer.

Last night (I had) 5. __________ gone to bed when I heard strange noises in our camp. (You will) 6. _____________ not believe what I saw when I shined my flashlight out. A large brown bear was helping himself to our food. We (should have) 7. ____________ put our food chest in the camper but we forgot. (It is) 8. ____________ all torn up now. The bear ripped the lid off. (We will) 9. ____________ have to buy a new food chest.

Tomorrow (I would) 10. ____________ like to go on a long hike if it (is not) 11. ____________ raining as it does here often.

I hope (you are) 12. ____________ enjoying your vacation time. (It will) 13. ____________ be good to see you when we return home.

Your friend,

Sean

MORE CONTRACTIONS

In the sentences below the contractions need to be changed to the two words that made up the contraction. See number 1.

Donna couldn't 1. could not lift all the books herself so she asked Valerie if she wouldn't 2. ________________ help out.

"It'll 3. ________________ be heavy, but I'm 4. ________________ working out regularly these days so I'd 5. ________________ be able to do it. You'd 6. ________________ never believe how good I've 7. ____________ been feeling since I exercise daily," answered Valerie.

"Well, that wasn't 8. ________________ so hard since we worked together," Donna said when they'd 9. ________________ finished.

BEGINNINGS AND ENDINGS

The first few letters in our mystery words are the same, but the words all have different endings. Use the clues to help you to find the missing letters.

A. Clues

1. Used to shine or polish
2. A long table holding a variety of food
3. Ox-like animal of Europe or Africa
4. A clown

1. buff
2. buff
3. buff
4. buff

B. Clues

1. Is the color of gold
2. Makes objects out of gold
3. A freshwater fish which has a reddish color
4. A metal with an outer layer of gold

1. gold
2. gold
3. gold
4. gold

C. Clues

1. Excessive, to a great degree
2. An introduction to a larger musical work
3. To project out over something
4. Working beyond the regular hours

1. over
2. over
3. over
4. over

D. Clues

1. To make shorter
2. Rapid handwriting in symbols
3. Not enough, deficit
4. Field position in baseball

1. short
2. short
3. short
4. short

E. Clues

1. Can be seen through
2. To change or reverse the order
3. Hinged window above a door or other window
4. The act of moving goods, materials, or people from one place to another

1. trans
2. trans
3. trans
4. trans

F. Clues

1. Not guilty
2. Located inside
3. One of nine divisions in a baseball game
4. To create or make something new

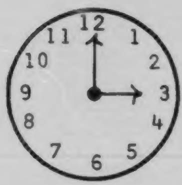
1. inn
2. inn
3. inn
4. inn

TIME

What will you most likely be doing at:

12:30 a.m.

12:30 p.m.



3:00 a.m.

3:00 p.m.

6:00 a.m.

6:00 p.m.

8:00 a.m.

8:00 p.m.

NMC-1

CLASSIFICATION OF ANIMALS

The animals listed below fit into special groups of animal classifications. Separate the animals in the list into their special groupings which are identified on the chart.

angelfish
newt
salamander
cat
chicken
alligator
sea horse
frog
whale
swan
penguin
king snake
eel
horse
raccoon
swordfish
shark
mud puppy
horned lizard
mouse
toad
boa constrictor
ostrich
tortoise

Fishes	Anphibians	Reptiles	Birds	Mammals

CLASSIFICATION OF PLACES

Place the following names into their correct classifications.

Italy
Chicago
New York
United States
Rome
Europe
Asia
Tokyo
China
Africa

Ireland
Antarctica
Portugal
North America
Moscow
Iran
London
Australia
France
Israel

India
Paris
West Germany
England
Tel Aviv
Finland
South America
Turkey
Athens
Oslo

Continents	Countries	Cities

NMC-3

CLASSIFICATION OF CAREERS

Into what categories do the following careers fall? Classify the careers according to the following criteria:

Works outdoors most of the time
Works indoors most of the time
Works mostly with the hands
Works with numbers

You may find that some careers may fall into more than one classification.

Bricklayer
Teacher
Metal worker
Writer
Forest ranger
Scientist
Architect
Actor or actress
Flight attendant
Veterinarian
Telephone operator
Gardener
Business manager
Baseball player
Clothing designer
Politician
Police officer
Building contractor
Research engineer
Attorney
Fisherman
Assembly line operator

Works Outdoors	Works Indoors

Works with Hands	Works with Numbers

NMR-1

ODD ONE OUT--ANIMALS

In each set of four words you will find one that doesn't belong. Cross it out.

Sample: horse ~~snake~~
cow dog

1.	angelfish	swordfish	2.	alligator	tortoise
	sea horse	frog		horned lizard	sea horse
3.	parrot	penguin	4.	kangaroo	tortoise
	ostrich	puffer		platypus	seal
5.	tadpole	puffer	6.	mud puppy	newt
	shark	eel		salamander	eel
7.	hummingbird	duck	8.	elephant	seal
	chicken	mole		whale	shark
9.	sloth	toucan	10.	iguana	tortoise
	tiger	walrus		gila monster	salamander
11.	emu	swan	12.	giraffe	tiger
	rhea	otter		lion	terrapin

ODD ONE OUT--CITIES

The following sets of words contain three words that belong and one that does not. Find the word that doesn't belong and cross it out. In the blank write a word that will fit with the rest of the group.

1. San Diego Paris
Chicago England
____

2. Moscow Mexico City
Berlin Uruguay
____

3. Vienna Cape Town
Memphis Oregon
____

4. Cairo Ethiopia
Sydney Tokyo
____

5. Houston Munich
Seattle Chad
____

6. Montreal Quebec
Boston Yukon
____

7. San Francisco Philadelphia
Miami District of Columbia
____

8. Detroit Santa Fe
St. Louis New Jersey
____

9. Denver Bolivia
Vancouver Paris
____

10. Rome Bombay
Madrid Iran
____

NMR-3

PAIRED RELATIONSHIPS

The first pair of words is matched to show a relationship. Match a word from the list that best completes the second pair and circle it.

Example

Cow is to calf as dog is to

a. kitten b. poodle [✓ c. puppy] d. animal

1. Needle is to sew as loom is to

a. yarn b. spin c. weave d. rug

2. Window is to glass as cake is to

a. flour b. oven c. icing d. pan

3. Eye is to sight as mouth is to

a. speak b. taste c. teeth d. lip

4. Brick is to clay as steel is to

a. copper b. furnace c. iron d. car

5. Bird is to fly as fish is to

a. water b. scales c. gills d. swim

6. Black is to white as night is to

a. noon b. sun c. day d. stars

7. The elephant is to a mouse as a hummingbird is to

a. duck b. ostrich c. whale d. eagle

8. Green is to grass as blue is to

a. rainbow b. flower c. sky d. eyes

9. Cold is to ice as fire is to

a. burn b. red c. hot d. smoke

10. Creek is to river as lake is to

a. ocean b. stream c. water d. river

HISTORY SEARCH

Which happened first? The following are important events in history but they are not listed in the order that they happened. You are to number the events in the order that they happened.

A. ____________ Man landed on the moon.

B. ____________ Civil War was fought.

C. ____________ Columbus sailed to America.

D. ____________ Gold was discovered in California.

E. ____________ Pilgrims landed at Plymouth Rock.

F. ____________ American Revolution ended.

G. ____________ Declaration of Independence was signed.

H. ____________ Marco Polo returns home with riches from China.

I. ____________ The Vikings touch the shores of North America.

WHICH HAPPENED FIRST?

Read *The Value Tale of Elizabeth Fry* by Spencer Johnson, M.D., and then number the events listed below in proper order as they happened in the story.

A. ____________ Schools were started in other prisons.

B. ____________ Elizabeth visits the women's prison for the first time.

C. ____________ Elizabeth lived in a lovely home in England.

D. ____________ Elizabeth Fry worked with kings and queens of Europe to improve prison conditions.

E. ____________ Elizabeth sees the women fighting in prison.

F. ____________ Elizabeth spoke at the London, England, House of Commons about improving prisons.

G. ____________ Elizabeth taught the women in the prisons to read and write.

TEACHER INFORMATION

One method used to strengthen NMS is through sequencing. Sequencing through speaking is an effective technique in teaching students how to organize their thoughts and, at the same time, build confidence in a speaking situation. Book activities and sharing of news events are common speaking situations that can be used to help sequence ideas.

One effective technique is to begin with pantomine, giving small groups of students situations to act out. This activity can lead to dialog situations where the students actually have to plan what they will say as well as acting out the situation.

Student demonstration of a skill, craft, or hobby is another speaking situation that is effective in the classroom.

Two pages which are useful in helping students prepare for a speaking situation are included in this section. The outline can be used as an example for the student to follow. The outline can be modified to fit the age and needs of the students.

QUOTATION MIX-UP

Rewrite the following mixed-up quotations into sentences that make sense. Use capital letters where they belong.

1. eye for an tooth a tooth a for an eye

____

2. return I shall

____

3. pie in finger every a

____

4. day dog has his every

____

5. are we amused not

____

6. bread man doth alone by live not

____

7. child spare and the rod spoil the

____

8. Satan behind me get thee

____

INTERNATIONAL SIGNAL CODE

The order of the sentences in the following paragraph has been mixed up. Rewrite the paragraph placing the sentences in the proper order.

The sailors look in the code book to understand the flag or flags. The International Signal Code is used by sailors from all different countries. Each flag stands for a message or part of a message. The sailors speak many different languages but they can all understand the flag messages. Each ship has a code book in the language of its country.

POINTS FOR EFFECTIVE SPEAKING

Enunciation

1. Speak words clearly.
2. Use full correct mouth, tongue, teeth, lip, and jaw movement.
3. Pronounce the whole word. Don't drop endings.
4. Don't substitute sounds.

Posture

1. Stand tall and straight.
2. Stay relaxed and comfortable.
3. Keep your hands at your sides when not in use.
4. Don't shift or sway.

Eye Contact

1. Look at individuals in all parts of your audience.
2. Speak to the friendly eyes in the audience.
3. Don't over-use your notes.

Voice Projection

1. Speak to the far corners of your audience.
2. Speak slowly and with force.

Vocal Variety

1. Have changes in *pitch*, high and low tones.
2. Work for changes in *force*, loud and soft.
3. Have variety in *rate*, slow and fast.

Two "Faces" of Criticism

When You Are the Critic

1. Be fair, honest, and tactful.
2. Have a friendly, helpful feeling.
3. Say something good along with something to work on.
4. Be objective, not personal and negative.
5. Give definite suggestions about how to improve, not vague general comments that are meaningless.
6. Judge others as you would be judged.

When You Are Being Criticised

1. Listen attentively to whatever criticism is offered.
2. Accept all comments graciously.
3. Ask about points you don't understand.
4. Keep a record of the main points, both strengths and weaknesses.
5. Correct at least one weakness the next time you speak.
6. Build your strengths: work on weak points.

SPEECH OUTLINE FORM

PURPOSE: ______________________________

TITLE: ______________________________

I. Introduction

II. Body

  A.

  B.

    1.

    2.

  C.

  D.

    1.

    2.

  E.

III. Conclusion

TAKE THINGS APART (LIST ATTRIBUTES)

Detective B. A. Hunter was the best detective on the whole Potsdam police force. Rare was the day he didn't bring in at least one dangerous criminal. Sometimes this courageous crime-fighter caught whole gangs single-handedly.

But Hunter had one fault: He was forgetful.

One day he forgot his handcuffs.

Another day he forgot his gun.

And so on. . . .

It's lucky he could think up ideas quickly and substitute everyday items for things he forgot.

One day the chief called Detective Hunder.

"There's been a crime at 91 Circle Drive," he said. "Report there at once to investigate!"

But when Detective Hunter arrived, he found that, as usual, he had forgotten something: his fingerprint powder.

Looking around, Detective Hunter saw a cigarette, a book of matches, and some .45 caliber bullets.

"Thank heaven!" he exclaimed. "I see at least two things I can substitute for my missing fingerprint powder."

What could Detective Hunter use as a powder?

1. ______________________________

2. ______________________________

The answer is easy--if you "take things apart" or combine them.

Detective Hunter opened the bullets and used the gun powder inside. He could have lit the cigarette and used the ash as powder, too.

Anything can be used in more than one way.

How many uses for a piece of paper can you list? Don't forget the lesson of Detective Hunter.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________

USE IT ANOTHER WAY

What are the other ways you could use the following objects? It doesn't matter how unusual your idea is if it works.

A Pencil

A Paper Clip

A Broken Crayon

An Old Tire

An Empty Egg Carton

A Butter Churn

COMBINE IDEAS

If I have one dollar and you have one dollar and we trade, we each still have one dollar.

If I have one good idea and you have one good idea and we trade, we each have two good ideas.

Combining ideas creates more possibilities. On the checkerboard drawing below, the X means combining peach ice cream with butterscotch topping.

TOPPINGS	ICE CREAMS			
	Vanilla	Chocolate	Peach	Strawberry
Hot fudge				
Cherry				
Butterscotch			X	
Chocolate				

Pick a combination you like and list all the thing you could add to make it even better (nuts, whipped cream, etc.). Adding new things to your original idea is called elaboration. How many combinations can you come up with?

PROVERBS

The game of Proverbs will give students a chance to match a situation with a proverb that it best illustrates.

Directions

Duplicate copies of the situations described on the following pages.

Duplicate copies of the proverb sheet on the following pages.

Divide the class evenly into five to fifteen groups depending on the size of the class.

Place one to three situations at each station along with the sheet of proverbs. Provide each student with an answer sheet numbered 1 to 15.

The students may work together at the tables to match the situations to the correct proverbs.

The students write the matching numbers on their answer sheet. (Example: Situation 1 matches Proverb 10.)

When time is called, each group moves to the next station, eventually rotating to all stations and matching all 15 situations with a proverb.

When all teams have completed the rotation the answers can be read and teams scored.

Ten points should be given for each correct answer.

The team with the highest score wins.

Situations

1. Johnny was on his way home from school. He remembered what the teacher said during a safety lesson that day. Look both ways before you cross the street. Watch the signal light to see if it is your turn to walk across the crosswalk. When he came to the intersection, the light signalled that it was time to cross. He looked both ways before stepping off the curb to cross.

2. Linda did not get out of bed when her mother called her to tell her it was time to get ready for school. By not getting up on time, she had to hurry and dress. She gulped down her breakfast and dashed off to school. Upon arriving at school she found she had forgotten her lunch, her math book, and her homework which was due that day. She tried calling home, but no one was there.

3. Jimmy was having fun at home putting his model airplane together. He had bought some glue just for this job. He was gluing the pieces together but he did not pay any attention to how much glue he was using. He wanted to make sure everything stuck together well. When he had just a few more pieces to put together he found he had run out of glue.

4. Students wrote their own play and planned to present it to another class. The scenery had taken a long time to make. Mary and Bob were to walk on stage. Mary was to pretend she was cooking on a stove, Bob to sit at the table talking to her. As they both entered on stage Mary slipped, knocking into Bob. Bob fell into the table, knocking it and most of the other furniture over. The table also tore some of the scenery. After the play, back in the classroom, Mary began to cry because Bob had gotten very angry over her clumsiness.

5. Mrs. Brown had read an ad in the paper about a sale on dresses. She arrived at the store before it opened. She waited until they opened the store doors and went in and purchased many good bargains.

6. Kim's mother looked on the calendar and realized Kim was due to have her yearly check-up with the dentist. She made an appointment for the next Wednesday after school. The dentist checked and x-rayed Kim's teeth and found everything was fine. She had no cavities.

7. A movie star made a great deal of money. It was a new thing for him to make so much money. Instead of putting it in a savings account he spent most of it on an expensive home, a yacht, expensive dinners, and such. Later, he was not as popular as before, and he found he was not asked to make any more pictures or appear on TV. Because he had spent all his money he could not afford to keep his lovely home or yacht. He had to find another kind of job.

8. David wanted to go to the football game the next Saturday. Tickets went on sale, but a limited number of tickets was being sold as the stadium would hold only so many people. David decided to wait until Wednesday after school to get his ticket as he would be going to Mark's house after school and he could stop in at the ticket agency on the way. The agency was out of his way when walking home on the other days. When Wednesday afternoon arrived he found the game was sold out.

9. Cynthia had had a bad day. It rained that morning. She slipped and fell in the mud on the way to school. At school she dropped her notebook and all the papers fell out. She had been hit by a ball at recess, and at lunch she found her mother had put a fresh egg in her lunch instead of a hard-boiled one. The one bright spot of the day, however, was when she arrived at math class--she found she had made the highest grade on the test she took the day before.

10. Jeff loved playing baseball. He longed to be the pitcher on the class team. He knew he could be a good one, but he never had the courage to ask the boys to give him a chance. Jeff never did get to be pitcher at any time during the season.

11. Christine decided to buy her lunch at school today. She was in line. The cafeteria was giving ice cream bars for dessert. While waiting in line some girls crowded in front of her which put her farther back in the line. Upon receiving their ice cream bars, the rude girls were disappointed with what the cafeteria gave them. When Christine's turn came, she found the cafeteria had run out of the kind she and the other girls didn't like and had started giving out the good kind she loved.

12. The Smith twins got together and decided to set up a lemonade stand. They made the lemonade, expecting to make a good deal of money and made plans to spend the money they earned on a tether ball game. They even went downtown and told the clerk they were coming back the next day to buy it. The lemonade stand did not make enough money that day or even all week to pay for the tether ball.

13. Sue and Jane were to be color guards for the scout troop at a PTA meeting. They both talked about all the things that could happen during the ceremony, such as dropping the flag, tripping and falling down, or even forgetting what they were supposed to do. They worried about it the night before meeting and all the next day. When the PTA meeting took place, the girl in the color guard were called in and everything went very nicely. None of the things happened the girls thought might take place.

14. The class was making a tile mosaic of a California mission. The students had the tiles on a rather wobbly table. Some of the boys leaned on the table and it collapsed. They landed on the tiles breaking some of them. Their teacher came over and said all was not lost as they could be fitted and glued together and would still fit into the mosaic.

15. Roger became very curious about all the wrapped packages on the shelves in his parents' closet. It was only a few days before his birthday and he knew they were all for him. He couldn't stand it any longer. He got a folding chair from the living room closet and put it up in his parents' closet. He climbed up on it, but as soon as he did it collapsed. He fell, bruising his knee and breaking his left wrist.

NMT-4
(Cont.)

1. NOTHING VENTURED, NOTHING GAINED

2. EVERY CLOUD HAS A SILVER LINING

3. DON'T COUNT YOUR CHICKENS BEFORE THEY'RE HATCHED

4. CURIOSITY KILLED THE CAT

5. ALL'S WELL THAT ENDS WELL

6. A FOOL AND HIS MONEY ARE SOON PARTED

7. HE WHO HESITATES IS LOST

8. DON'T CROSS YOUR BRIDGES UNTIL YOU COME TO THEM

9. DON'T CRY OVER SPILLED MILK

10. LOOK BEFORE YOU LEAP

11. HASTE MAKES WASTE

12. THE EARLY BIRD CATCHES THE WORM

13. A STITCH IN TIMES SAVE NINE

14. EVERYTHING COMES TO HIM WHO WAITS

15. WASTE NOT, WANT NOT

MORE PROVERBS

Directions

Try to match the situation to the right proverb.

Proverbs

1. A rolling stone gathers no moss. ____________
2. Look before you leap. ____________
3. Haste makes waste. ____________
4. The early bird catches the worm. ____________
5. Nothing ventured, nothing gained. ____________
6. Where there's a will, there's a way. ____________
7. A stitch in time saves nine. ____________
8. Curiosity killed the cat. ____________
9. Don't count your chickens before they're hatched. ____________
10. All that glitters is not gold. ____________

Situations

1. Tim got to the ticket office early in the morning and got a good seat for the game. Bill went to the ticket office late that same afternoon but all the seats had been sold.

2. A new family moving from another city found a lovely new house atop a hill. They called it their "dream home." After they had been there for a short time they found many things wrong with it and decided it was too expensive to live there.

3. Although Joyce didn't feel like it she decided she had better put the trash out for pickup before it started to rain. It soon began to pour and the place where the barrels for trash were usually kept became a sea of mud.

4. John was always active outside school. He liked to learn new things and find new ways of doing things. Jim liked to rush home and watch his favorite TV shows.

5. Alan submitted a guess on the number of jelly beans in the jar at the candy store. He was so positive he would win that he went to the sports store and ordered a new baseball he had been wanting. He did not win the contest.

6. On the way to and from school Laura was always careful to look both ways before crossing the street.

7. The candy store put on a contest for the school children. The one who could come the closest to guessing the number of jelly beans in the jar would win $5.00. Mary tried, but Alice wouldn't as she said she never wins anything anyhow.

8. Tim was always asking questions. He wanted to find out about everything and everybody. Today he had to discover what it was his brother was doing in the garage. He stole in there while no one was around to have a look.

9. Betty did not get up when her alarm went off so she had to hurry to get ready for school. She ran all the way so that she wouldn't be late. When she arrived, she found she had forgotten all the homework she was supposed to turn in that day.

10. Steve had a tough math problem to do. He could have waited for the teacher to help him the next day. After trying many ways he finally found the solution on his own.

FOLLOWING DIRECTIONS

The following directions were given for cutting out and constructing a paper model. They do not make sense in the order they are now written. Number the directions in the order you think they should be followed.

A. ____________ On the six small triangles on the sides of the figure, bring the cut line over to the scored line.

B. ____________ Cut along solid lines.

C. ____________ Paste or glue.

D. ____________ Reproduce the pattern on construction paper

E. ____________ Fold along dotted lines.

MEAN WHAT YOU SAY

Do we really mean what we say? What do you think the following expressions really mean.

1. It's raining cats and dogs.

2. Madder than a wet hen.

3. I'd give my eyetooth for that.

4. Don't count your chickens before they hatch.

5. Slower than molasses in January.

6. I could eat a horse.

7. Faster than greased lightning.

8. That's not my bag.

WHAT WOULD YOU DO?

What would you do if . . .

1. You broke a window at school?

2. Forgot your lunch?

3. You were lost?

4. The electricity went off?

5. You lost a library book?

6. You found money in the classroom?

7. Your friend copied your answers on a test?

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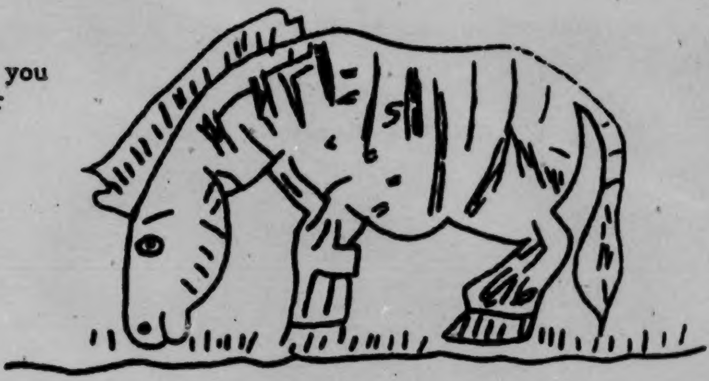
WHAT DO YOU THINK?

What would you think if one morning you saw a zebra grazing in front of your house? Write a story about it.



WHAT ARE YOU?

Do you like to pretend sometimes? ______________________________

If you would like to pretend now, let's make-believe that you are green, green all over.

What are you? ______________________________

What do you look like? ______________________________

____

Can you move? __________ How? ______________________________

Can you make noises? ______________________________

What do you sound like? ______________________________

Will you always be green? __________ Why? ______________________________

____

Can you help people or animals? ______________________________

How can you do this? ______________________________

Draw a picture of what you are.

Let's pretend that you are furry--very soft and furry.

What are you? ____________________

What do you look like? ____________________

____

Do people like you? __________ Why? ____________________

____

Can you move? __________ How? ____________________

____

What do you eat? ____________________

____

How do you sleep? ____________________

____

Draw your picture.

USING THE LETTER FORM TO MOTIVATE CREATIVE WRITING

At times, after the children have written letters for practical purposes, they may enjoy using a letter in imaginative ways as a creative writing effort. Such letters can be used for reports in various subject-matter areas. Some suggestions are presented below:

Letter from outer space.

(You are the first person to land on the moon. Write us a letter telling about your trip and conditions on the moon.)

Letter from another period in our history.

(You've been transported in time to the days when the pioneers moved west, or to the world of tomorrow. Write a letter to your present-day family or classmates to tell of your experiences.)

Letter from another country.

(Write a letter telling about your experiences as a stranger or a visitor in another state or country.)

Letter from a pet to master.

(Write as though you were your pet telling how s/he feels about the way s/he is treated, the things that annoy her/him, and so on.)

Letter to the class that will be in your grade next year.

(At the end of the year write to the boys and girls in the grade below yours to tell them about the achievements and special activities of your grade.)

Letter to your favorite fictional character.

(Write a letter to your favorite fictional character inviting him/her to spend some time with you and telling him/her why you two might enjoy doing some things together.)

Letter to an American hero.

(Write a letter to an American hero/heroine expressing your ideas on why the people of this country admire and respect him/her. You may want to tell some of the things you can do to show your appreciation for American heroes.)

WHO IS THE ENGINEER?

Can you discover who ran the train? This is an exercise in logical thinking and deduction. Sort out the facts and find your answer.

1. Smith, Jones, and Robinson are the engineer, brakeman, and fireman on a train, but not necessarily in that order. Riding the train are three passengers with the same three surnames, to be identified in the following premises by a "Mr." before their names.

2. Mr. Robinson lives in Los Angeles.

3. The brakeman lives in Omaha.

4. Mr. Jones long ago forgot all the algebra he learned in high school.

5. The passenger whose name is the same as the brakeman's lives in Chicago.

6. The brakeman and one of the passengers, a distinguished mathematical physicist, attend the same church.

7. Smith beat the fireman at billiards.

WHO IS THE ENGINEER?

WHO OWNS THE ZEBRA?

On a dirty street, stranger accosts stranger with a mimeographed sheet of paper and the question "Have you seen this?" In university dormitories, the problem is tacked to doors. In suburban households, the ring of the telephone is likely to herald a voice that asks, "Is it the Norwegian?"

The cause of the excitement is the brain-teaser below. The facts essential to solving the problem--which can indeed be solved by combining deduction, analysis, and sheer persistence--are as follows:

1. There are five houses, each of a different color and inhabited by men of different nationalities, with different pets, drinks, and cigarettes.
2. The Englishman lives in the red house.
3. The Spaniard owns the dog.
4. The Ukrainian drinks tea.
5. Coffee is drunk in the green house.
6. The green house is immediately to the right (*your* right) of the ivory house.
7. The Old Gold smoker owns snails.
8. Kools are smoked in the yellow house.
9. Milk is drunk in the middle house.
10. The Norwegian lives in the first house on the left.
11. The man who smokes Chesterfields lives in the house next to the man with the fox.
12. Kools are smoked in the house next to the house where the horse is kept.
13. The Lucky Strike smoker drinks orange juice.
14. The Japanese smokes Parliaments.
15. The Norwegian lives next to the blue house.

Now, who drinks water? And who owns the zebra?

BRAIN TWISTER

This one is being used by some personnel directors in oral aptitude tests for job applicants; you're supposed to answer in one and one-half minutes:

If a man and one-half can eat a pie and one-half in a minute and one-half, how many men would it take to eat 60 pies in 30 minutes?

IT AIN'T NECESSARILY SO

The flagman who waves a lantern on a dark night at the railroad crossing is not doing his duty unless that lantern is lit. The same holds true of throwing a match into a kerosene-soaked pile of paper; nothing will happen unless you light the match first. Here is a quiz to test your thinking. Don't jump to conclusions, but think of all possibilities. Of the statements below, some are *always* true and some are not. Can you distinguish which are true and which are not? Score 10 for each correct answer. A perfect score is 90, average is 60. Take it easy before checking with the answer page.

1. Anyone who claims to foretell future events with positive certainty is a fake. YES NO

2. If you put your bare finger into a cup filled with coffee, you finger will get wet. YES NO

3. If your fingerprints are the same as those found on a glass, then you have touched that glass. YES NO

4. If I can see your eyes in the mirror, you can also see mine unless you're blind. YES NO

5. If you jump off the roof of the Empire State Building in New York City and you fall all the way, you'll be killed. YES NO

6. If you mix a good clear blue paint with a good clear yellow paint, the result will be green. YES NO

7. If an educated United States citizen, living in the United State for more than 21 years, is not allowed to vote, he/she has been guilty of some crime. YES NO

8. It is a very unseasonable January day if the temperature outside is 90° in the shade. YES NO

9. Anyone born on February 29th can celebrate his true birthday every four years. YES NO

THE DIRTY DOZEN

1. A woman gave money to a beggar. She was the beggar's sister, but the beggar wasn't her brother. Why?

2. Two sisters born on the same day to the same parents and who looked alike said they were not twins. Why?

3. How many animals of each kind did Moses take on the ark with him?

4. If a plane carrying United States citizens crashed in Mexico, where would the survivors be buried?

5. Seventeen students took a test. All but nine failed. How many passed?

6. An archeologist found two gold coins dated 39 B.C. He knew at once they were fakes. How?

7. If you went to sleep at 8:00 p.m. and set your alarm for 9:00 the next morning, how many hours sleep would you get?

8. If you had only one match and entered a dark room to start up a kerosene lamp, an oil heater, and a wood stove, what would you light first?

9. If a roof runs north to south, and a rooster on the peak faces east, which way will the egg roll?

10. How many outs in an inning of baseball?

11. A man builds a house with 4 sides to it, and it is rectangular. Each side has a southern exposure. A big bear wanders by. What color is the bear?

12. Two men played checkers. They played three games and each man won two. How?

ANSWERS

NFC-2 WORD FRAMES (SIMPLE)

A. 8

B. 5

C. 1

D. 7

E. 9

F. 6

G. 3

H. 2

I. 4

J. 10

NFC-3 WORD FRAMES (COMPLEX)

A. 2

B. 5

C. 1

D. 4

E. 10

F. 8

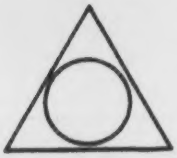
G. 3

H. 6

I. 9

J. 7

NFR-1 WHAT'S NEXT?

1.


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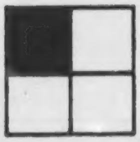

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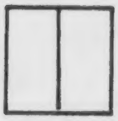

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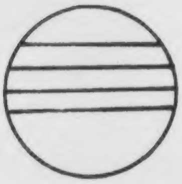

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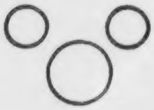

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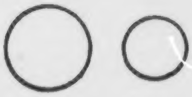
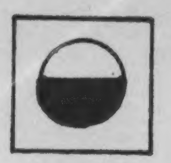


NFR-2 RELATIONSHIPS

1.


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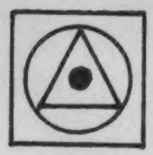
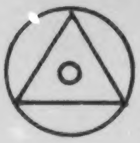
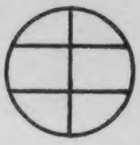


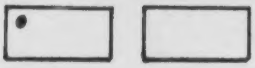
3. any geometric figure

4.


5. any letter which is symetrical

6.


NFS-1 COMPLETE A PATTERN

1.


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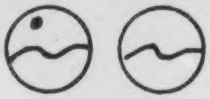
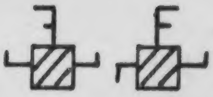


3.


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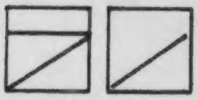

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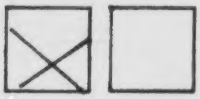

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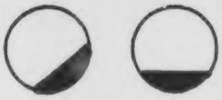

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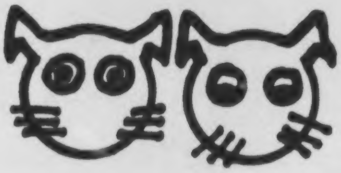

NSC-1 FIND THE COST OF ONE

1. 35¢
2. 126 pages
3. 85¢
4. $3.36
5. 45¢
6. 22-1/2
7. $108.00
8. 4420 feet
9. 63 feet
10. 525 yards
11. 150 dozen
12. $22.08
13. $41.25
14. 16.5
15. 18 buttons
16. 144 boxes
17. 90 beets
18. $5.25
19. $47.25
20. $55.40

NSR-1 CODES AND CIPHERS

1. Beware of secret codes.
2. Can you find the message?
3. Which way do you read the code?
4. Waste not, want not.

NSR-2 CODES, CRYPTOGRAMS, AND CIPHERS

1. Easy, is it not?
2. If you really know how to see in new ways, your problem is solved.
3. If you reverse yourself, you have it made.
4. Jack be nimble,
   Jack be quick,
   Jack jump over
   The candle stick.
5. Too wise you are,
   Too wise you be.
   I see you are
   Too wise for me.

NSR-3 WHAT DO THESE SYMBOLS MEAN?

1. Mother gave each of us a piece of cake.
2. Father has a new blue hat.
3. The boy and girl looked for their lost bird.
4. The ice cream man comes to our street at night.

NSR-4 CODED MESSAGES

A = 101
B = 81
C = 40
D = 10
E = 4
F = 48
G = 28
H = 100
I = 96

J = 17
K = 8
L = 7
M = 21
N = 56
O = 35
P = 5
Q = 3
R = 20

S = 72
T = 36
U = 0
V = 1
W = 15
X = 9
Y = 6
Z = 22

Message: YOU ARE REALLY SPECIAL IF YOU FIGURE THIS OUT.

NSS-2 ALPHABETICAL ORDER

A.

1. code
2. comb
3. come
4. cone

B.

1. meal
2. mean
3. medal
4. metal

C.

1. abide
2. alter
3. always
4. anger

D.

1. beach
2. bird
3. bottle
4. brother

E.

1. naughty
2. nice
3. noise
4. novel

F.

1. leap
2. leather
3. leaves
4. leaving

G.

1. straight
2. strap
3. stream
4. street

H.

1. weigh
2. weight
3. weighted
4. weightless

NSS-5 HIDDEN SENTENCES

1. Sue took it.
2. I looked for Martha.
3. We ate popcorn during the show.

NST-1 WORD WITHIN A WORD

1. emotional
2. disarm
3. courageous
4. nobleman
5. concentrate
6. carbonated
7. castanet
8. eyelet
9. latchkey
10. phosphorescent
11. shipment
12. deformity
13. partisan
14. broadsword
15. centimeter
16. knowledge
17. cowardly
18. bright
19. condiment
20. killdeer

NST-2 MAKE A WORD

1.	dater	trade, tread, rated
2.	dowry	wordy, rowdy
3.	dale	deal, lade, lead
4.	large	glare, lager
5.	there	three, ether
6.	kids	disk, skid
7.	nears	earns, snare
8.	grab	brag, garb
9.	tubs	bust, stub
10.	name	amen, mane, mean
11.	plead	pedal, paled
12.	begin	being, binge
13.	made	mead, dame
14.	realist	retails, saltier
15.	painters	pantries, repaints

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NMU-1 CONTRACTIONS

1. We've
2. wouldn't
3. we've
4. I'd
5. I'd
6. You'll
7. should've
8. It's
9. We'll
10. I'd
11. isn't
12. you're
13. It'll

NMU-2 MORE CONTRACTIONS

1. could not
2. would not
3. It will
4. I am
5. I would
6. you would
7. I have
8. was not
9. they would

NMU-3 BEGINNINGS AND ENDINGS

A.
1. buffer
2. buffet
3. buffalo
4. buffoon

B.
1. golden
2. goldsmith
3. goldfish
4. gold-filled

C.
1. overmuch
2. overture
3. overhang
4. overtime

D.
1. shorten
2. shorthand
3. shortage
4. shortstop

E.
1. transparent
2. transpose
3. transom
4. transportation

F.
1. innocent
2. inner
3. inning
4. innovate

NMC-1 CLASSIFICATION OF ANIMALS

Fishes	Amphibians	Reptiles	Birds	Mammals
angelfish	newt	king snake	chicken	cat
seahorse	salamander	alligator	swan	whale
eel	frog	horned lizard	penguin	raccoon
swordfish	mud puppy	boa constrictor	ostrich	mouse
shark	toad	tortoise		horse

NMC-2 CLASSIFICATION OF PLACES

Continents	Countries	Cities
Europe	Italy	Chicago
Asia	United States	New York
Africa	China	Tokyo
Antarctica	Ireland	London
North America	Portugal	Moscow
South America	Iran	Paris
	Australia	Tel Aviv
	France	Athens
	Israel	Oslo
	India	Rome
	West Germany	
	England	
	Finland	
	Turkey	

NMC-3 CLASSIFICATION OF CAREERS

Works Outdoors	Works Indoors	
Bricklayer	Teacher	Clothing designer
Metal worker	Writer	Politician
Forest ranger	Scientist	Research engineer
Actor or actress	Architect	Attorney
Gardener	Actor or actress	Assembly line operator
Baseball player	Flight attendant	Telephone operator
Police officer	Veterinarian	Business manager
Building contractor		
Fisherman		

NMC-3 CLASSIFICATION OF CAREERS (Cont.)

Uses Hands	Works with Numbers
Bricklayer	Teacher
Metal worker	Scientist
Gardener	Architect
Baseball player	Telephone operator
Fisherman	Business manager
Assembly line operator	Building contractor
	Research engineer

NMR-1 ODD ONE OUT--ANIMALS

1. frog
2. sea horse
3. puffer
4. tortoise
5. tadpole
6. eel
7. mole
8. shark
9. toucan
10. salamander
11. otter
12. terrapin

NMR-2 ODD ONE OUT--CITIES

1. England
2. Uruguay
3. Oregon
4. Ethiopia
5. Ch[illegible]
6. Yukon
7. District of Columbia
8. New Jersey
9. Bolivia
10. Iran

NMR-3 PAIRED RELATIONSHIPS

1. c. weave
2. a. flour
3. b. taste
4. c. iron
5. d. swim
6. c. day
7. b. ostrich
8. c. sky
9. c. hot
10. a. ocean

NMR-4 HISTORY SEARCH

A. 9
B. 7
C. 3
D. 8
E. 4
F. 6
G. 5
H. 2
I. 1

NMR-5 WHICH HAPPENED FIRST?

A. 3
B. 2
C. 1
D. 7
E. 3
F. 6
G. 4

NMS-1 QUOTATION MIX-UP

1. An eye for an eye, a tooth for a tooth.
2. I shall return.
3. A finger in every pie.
4. Every dog has his day.
5. We are not amused.
6. Man doth not live by bread alone.
7. Spare the rod and spoil the child.
8. Get thee behind me, Satan.

NMS-2 INTERNATIONAL SIGNAL CODE

The International Signal Code is used by sailors from all different countries. The sailors speak many different languages but they can all understand the flag messages. Each flag stands for a message or part of a message. Each ship has a code book in the language of its country. The sailors look in the code book to understand the flag or flags.

NMT-4 PROVERBS

Situation	Proverb
1	10
2	11
3	15
4	9
5	12
6	13
7	6
8	7
9	2
10	1
11	14
12	3
13	8
14	5
15	4

NMT-5 MORE PROVERBS

Proverb	Situation
1	4
2	6
3	9
4	1
5	7
6	10
7	3
8	8
9	5
10	2

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NMT-6 FOLLOWING DIRECTIONS

A. 4
B. 2
C. 5
D. 1
E. 3

NMI-5 WHO IS THE ENGINEER?

Smith

To Tally Facts

Engineer	Brakeman	Fireman		L.A.	Omaha	Chicago
1	0	0	Mr. Smith	0	1	0
0	1	0	Mr. Jones	0	0	1
0	0	1	Mr. Robinson	1	0	0

NMI-6 WHO OWNS THE ZEBRA?

The Norwegian drinks water. The Japanese owns the zebra.

HOUSES	Yellow	Blue	Red	Ivory	Green
INHABITANTS	Norwegian	Ukrainian	Englishman	Spaniard	Japanese
PETS	Fox	Horse	Snails	Dog	Zebra
BEVERAGES	Water	Tea	Milk	Orange Juice	Coffee
CIGARETTES	Kool	Chesterfield	Old Gold	Lucky Strike	Parliament

BRAIN TWISTER

If one and one-half men can eat one and one-half pies in one and one-half minutes, twice as many men can eat twice as many pies in the same time. If three men can eat three pies in one and one-half minutes, then one man can eat one pie in one and one-half, minutes. So in 30 minutes one man can eat 30 divided by one and one-half, or 20 pies; and three men would be needed to eat 60 pies in 30 minutes.

NMI-7 IT AIN'T NECESSARILY SO

1. NO (Eclipse of sun and moon, and weatherman)
2. NO (Instant coffee)
3. YES
4. YES
5. NO (Only 6 floors. The observation platform is 6 levels below top.)
6. YES
7. YES
8. NO (Not in Australia or South America.)
9. NO (1900 is not a leap year.)

NMI-8 THE DIRTY DOZEN

1. The beggar was her sister.
2. They were part of triplets.
3. Moses did not build the Ark.
4. Survivors would not be buried.
5. Nine
6. People would not know when Christ would be born.
7. One hour
8. The match
9. Rooster would not lay an egg.
10. Six
11. White--house on North Pole so bear is a polar bear
12. They were not playing each other.

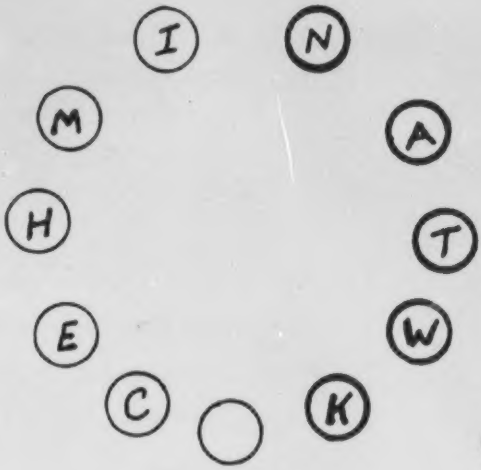
CONVERGENT PRODUCTION GAMES

These game activities can be made to use in the convergent production lab or as a group activity for students when working in the area of convergent production.

Games may also be used to supplement reading or math activities thus giving students further convergent experiences in these areas.

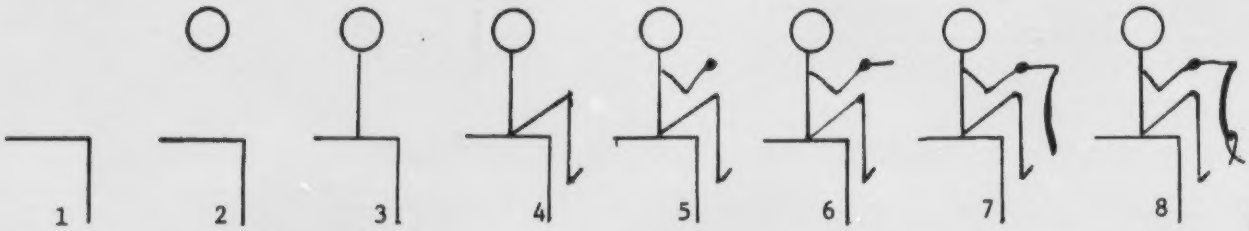
Twickenham

Eleven discs are arranged in a circle as shown. The bottom disc is vacant. Object is to spell Twickenham in a clockwise direction leaving the bottom space vacant again. Darker markers move only clockwise and light markers move counterclockwise. A disc may jump one of the opposite color if there is the vacant space available to land upon. Can you do this in 26 moves?



Fisherman

This is a spelling game for two. One player is chosen to be the fisherman. S/he mentally selects a word and draws one dash for each letter in that word. The other player tries to guess the word by calling letters of the alphabet. As a letter is called, it is crossed out, and may not be guessed again. If the letter called is in the word, the fisherman writes it on the proper dashes as many times as it occurs. If it is not in the word, one line is drawn on the fisherman as shown. The object of the game is to guess the word before the fisherman can catch the fish.



Snap

Number of Players: 2 or more

Rules: Two or more players may play. Deal all cards evenly among the players. Each player puts his/her cards face down in a stack in front of him/her. Each player in turn takes the top card and turns it face up. If it is a synonym of a face-up card in any opponent's stack, either player may say "Snap!" The player saying "Snap" first gets all the cards in his/her opponent's face-up stack. He/She puts them at the bottom of his/her face-down stack, and the game continues.

The object is to take all the cards from the opponents. If the playing time ends before any player takes all the cards, the player holding the most cards (counting both the face-up and face-down stacks) is the winner.

Synonym Rummy (Another type game to be used with the same cards.)

Number of Players: 2 or 4

Rules: Deal 6 cards to each player. Place the remaining cards face down in the center of the table, and turn the top card face-up beside the stack.

The object is to collect sets of 3-4 synonyms.

Player 1 opens by drawing either the face-up card or the top card from the stack. S/He arranges the cards in her/his hand by synonym sets and discards one unwanted card, placing it on the face-up pile.

Player 2 may then draw either Player 1's discard or the top card of the face down stack, and so on.

Each time a player collects a set of 3 or 4 synonyms s/he may place them face up on the table in front of her/him. If a player lays down a set of 3 cards and any other player holds the fourth card to that set, that other player may lay the card face-up in front of her/him and it will count in her/his score.

The game ends when one player has laid down all the cards in her/his hand. Each player then counts the cards on the table in front of her/him, and the person with the most cards wins.

How to Make: Prepare 52 cards (13 sets of synonym cards).

Proverb Game

Number of Players: 2 to 4

Materials:
- 1 pack of 30 proverb cards
- 1 list of proverbs in the set
- 15 small sticker cards with matching picture to proverb cards
- 1 story board
- 4 story cards whose stories match those on the story board--1 for each player
- 1 answer card to the story board

Proverb Game (Cont.)

Object: To see which player can match the most proverbs and proceed to match the proverbs to the proper description.

Rules: Dealer deals 4 cards to each player. (Five cards are dealt if less than 4 are playing.) The remaining cards are stacked in a pack in the center of the table. Player on dealer's right starts the game by asking someone for a matching proverb card. (The players must ask for the *missing line* of the proverb *not* the picture on the card.) If the player asked has the card, it must be given. The player then gets another turn. When another player does not have the card the player is asking for, the player who asked must draw from the pack. Whenever a player makes a match s/he takes the cards from her/his hand and lays the matching pair on the table in front of her/him. (The match is made when the pictures on the cards are the same. No two proverb cards have the same picture.) This part of the game ends when the players have made matches with all pairs.

If a player loses all the cards in her/his hand, s/he may draw one from the deck to keep in the game. S/He would get another turn if s/he lost all her/his cards when s/he laid down pairs.

Each player gets 10 points for every proverb card s/he has matched.

The game then continues on the story board. It should be placed in the middle of the table. One player deals the sticker cards to each one in the game. S/he should match them with the proverb cards. With the proverb cards and matching sticker cards in front of them, each player then proceeds to read her/his own story card. (It is not necessary to take turns in this part of the game.) The story cards match the story board, not only by the numbers but in the stories also. The players then proceed to find which of the 15 stories match the pair or pairs of proverbs. The player then places the small sticker card on the story board in the square s/he thinks matches the proverb. More than one card may be placed on a story. When all players have finished placing their stickers on the story board, the players check their answers with the answer card. Those sticker cards placed in the wrong square of the story board should be removed.

For each correctly matched proverb and story, the player receives 10 points. The player with the most points from both games is the winner.

A good follow-up to this game would be to make up your own proverbs.

Math Concentration

Number of Players: 2

Object of the Game: To match as many math problems with their answers as possible.

Rules: All number problems and answer cards are turned face down on the board. The player starting the game turns over any card on the board. S/He then turns over another card in hopes of finding either the problem or answer which would match the card s/he first turned over. If there is no match the player then

Math Concentration (Cont.)

turns both cards face down and the second player takes a turn and proceeds to turn over two cards. Each player tries to remember the placement of the number problems or answer cards in order to make a match. When a matching pair does occur, the two matching cards are taken off the board by the player and placed in front of her/him. The game ends when all pairs have been matched. The player with the most pairs wins. Note: Each card must be turned over completely and placed face-up on the board so that each player may see the cards.

In math concentration, every card is marked on the reverse side to indicate which times table is on the board. More than one set of times tables must be used in order to fill up the board. If a player should happen to make a match by using an answer or problem card from another table, s/he should be given credit for the match. There will, however, be some cards left on the board at the end of the game that don't match.

If only one set of times tables is preferred, the playing board may be used in a 4 x 5 combination of squares or the game may be played completely off the board.

How to Make: A board is marked off in 2-inch squares in a 5 x 6 (30 squares) or a 4 x 5 (20 squares) matrix. Cards should be cut smaller than the squares on the board, approximately 1-3/4" x 1-3/4". Math problems and answers should be printed on one side, the number of the times table on the other side.

Multiplication Rummy

Materials: Twenty-seven cards with the following combination on them:

2	2	2	2	2	2	3	3	3	3	3	3	4	4	4
x2	x3	x4	x5	x6	x7	x2	x3	x4	x5	x6	x7	x2	x3	x4

4	4	4	5	5	5	6	6	6	7	7	7
x5	x6	x7	x2	x3	x4	x2	x3	x4	x2	x3	x4

Twenty-seven additional cards with the following numbers on them, one number per card:

4, 6, 6, 8, 8, 9, 10, 10, 12, 12, 12, 12, 14, 14, 15, 15, 16, 18, 18, 20, 20, 21, 21, 24, 24, 28, and 28.

Rules:

1. Mix the cards well. Then give 6 cards, one at a time, to each player. Put the rest of the cards in the middle of the table, face-down.
2. The player at the left of the dealer draws a card from the pack. S/he then looks at the 7 cards. S/he lays down *all* pairs. A pair is a question card and its answer card.

Multiplication Rummy (Cont.)

3. The player then takes a card that s/he does not want from her/his hand. This card is put face-up beside the pack in the center of the table.

4. The next player may pick up the discarded card, the card that was thrown away by the other player, or may draw a card from the top of the pack. Then s/he lays down all pairs and discards one card as the first player did.

5. In the same way each of the other players has a turn. If all cards in the center of the table are drawn, the pile of discards is turned over, and play continues as before. The player who gets rid of all cards first says "Rummy" and wins the game.

Nursery Rhyme Arithmetic

Read a nursery rhyme a line at a time to the players, who should write the lines, one under the other. When the writing is completed, the players should count the letters in each line and put that number out to the right of the line. When all are ready, tell the players what to do with each number. The correct answer to the problem depends upon the correct spelling, except when a player misspells a word but uses the correct number of letters; s/he may still get the right answer. Give a point for the correct answer and an extra point if all the words are spelled correctly.

1.	Star light	9	
	Star bright	x10	90
	First star	+ 9	99
	I see tonight	÷11	9
	I wish I may	+ 9	18
	I wish I might	x11	198
	Have the wish	-11	187
	I wish tonight	+12	
			199

2.	Jack Sprat could	14	
	Eat no fat	+ 8	22
	His wife could	+12	34
	Eat no lean	- 9	25
	So between	x 9	225
	The two of them	-12	213
	They licked	x10	2130
	The platter	-10	2120
	Clean	÷ 5	
			424

3.	One	3	
	Two	+ 3	6
	Button	x 6	36
	Your	- 4	32
	Shoe	÷ 4	
			8

4.	Three	5	
	Four	+ 4	9
	Close	x 5	45
	The	÷ 3	15
	Door	- 4	
			11

Fish

Materials: Fifty cards, five each of the numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

Players are dealt a hand of six cards which they are to try to make into books of number families. The number families are decided before the game begins. (A number family means a combination of two numbers which total whatever number has been decided. If 6 is the number, a book might consist of cards numbered 4 and 2, or 3 and 3, and so on.) New cards are added by asking fellow players for a certain number. If the player asked has the card, s/he gives it to the one calling; otherwise, s/he says "Fish" and the caller draws one card from the pile. The one who first makes all of the cards in her/his hand into "books" wins the game. Scores can also be kept by counting the books made by each player in each game and adding these numbers at the end of the playing period.

Sub-Add

Materials: Forty cards, four each of numbers 1 through 10.

The game is most fun when played by two people. Each player is dealt half of the pack. S/He stacks the cards face-down in front of her/himself.

Then the players turn up (at the same time) one of their cards. The player having the card with the smaller number should subtract that number from the number on opponent's card. If s/he gives a wrong answer, the opponent scores a point *if* s/he calls out the right answer. For example, if the player turns up a 4 and the opponent turns up a 10, the player subtracts 4 from 10. If the player says, "Six" s/he scores a point. If s/he says some other number and the opponent calls out six, the opponent gets the point. If both players turn cards having the same number, the first one who calls "Zero" wins the point.

The play on *Sub* continues until all the cards have been turned. Then the cards are shuffled for the next round of *Add*. As before, each player turns up one of her/his cards, and the one having the card with the smaller number starts the play. But now s/he should add the numbers on the cards. Two rounds make a game. The player with the most points wins.

Convergent Production Task Cards

Task cards created for use with the convergent production factor are presented on the following pages. Answers for exercises are presented at the end of the section.

The task cards have also been printed on a heavier stock and sets (Stock No. 41-S-9941) may be ordered through the Office of Materials Development, 293-8140.

N
Task Card 1

USE THAT LETTER

This activity can be played with two or more players.

Players pick a letter and make sentences using words beginning with that letter. The longest sentence with the most words beginning with that letter wins. Examples:

(g) A goat got into the garden.
(m) Mary made many pictures.
(t) Tommy tried to tell time.

Make the game harder by choosing a blend. Examples:

(br) The brown branch is broken.
(ch) Charles chewed cherries.

N
Task Card 2

RHYMING WORDS

This activity can be played with two teams of two or more players or with two players.

Choose a word from the list below. Each player or team writes words that rhyme with the word. The player or team with the most real words wins.

hop
cat
wing
sail
car
well
long
cap
back
man
wag
tent
mill
clock
sled
think
hit
drum
west
took
jump
hand
stick
tip
pan
sad
frog
pot

Players may repeat the game using different words.

N
Task Card 3

COMPOSE A TELEGRAM

Players needed: Three or more

One student says five letters. All the other students write the letters, and then compose a telegram, using the five letters as the first letters in the words. The first player to write a telegram wins and chooses the next set of letters. Examples:

W M Y I T	Will meet you in Texas.
B B B T M	Baby boy born this morning.
P L A T O	Plane leaves at ten o'clock.

LETTER TIC-TAC-TOE

Players needed: Three or more

Students make a tic-tac-toe square on paper. The caller names 9 letters, including some vowels. After the caller names each letter, the players write it in one of the squares. Students try to place letters to make words across and down. The caller does not look at the players' squares until the end of the game. Then the caller decides which player has the most actual words. That player is the winner. Example:

c	a	r
o	i	l
t	r	p

car, air, cot, oil

N

Task Card 5

COMPOUND WORDS

Duplicate the two columns of words below. Distribute to students. Ask them to write as many compound words as possible by combining words from the first and second columns. The first student to write all the compound words wins.

after -	noon
every	foot
ever	thing
rail	green
bare	road
base	room
class	plane
down	ball
gold	town
air	fish
any	some
lone	ground
corn	where
play	house
club	field

ILLUSTRATING SENTENCES

Players needed: Two or more

Choose one of the sentences below and finish it. Draw a picture to illustrate the sentence. Write the sentence under the picture. Example: I feel light as a *bubble*.

Two students may choose the same sentence. Each tries to find different ways to end the sentence. The one with the most endings wins.

I feel light as a . . . . . bubble feather snwoflake

My feet are as cold as . . . . .

The house is as warm as . . . . .

He's as big as . . . . .

She was as gentle as . . . . .

It was as dark as . . . . .

I'm as hungry as . . . . .

I'm as sleepy as . . . . .

He's as mean as . . . . .

He's as slow as . . . . .

ENDING WORDS

Players needed: Two or more

Each student takes a turn at the sentences below. If one student cannot write the answer the other student has a chance. Each correct answer receives one point.

1. Add a blend to make a color of the sky. _ _ue
2. Add a blend to make a fruit. _ _um
3. Add a blend to make a fairy-tale animal. _ _agon
4. Add a blend to make the leader of our country. _ _esident
5. Add a blend to make a circus funny man. _ _own
6. Add a blend to make a color. _ _een
7. Add a blend to make a tiny part of a branch. _ _ig
8. Add a blend to make what is done with an axe. _ _op
9. Add a blend to make a big boat. _ _ip
10. Add a blend to make a bird. _ _ow

N

Task Card 8

A NINE TRICK (ZERO OR ZILLIONS)

Choose any group of numbers that add up to 9.
For example: 1 and 1 and 5 and 2

Write these numbers in any order you like.
For example: 2, 115

This number can always be divided by 9. Nothing left over! Every time!

It doesn't matter *how many* numbers you use in adding up to 9. (And you can put in as many zeros as you like.)

It doesn't matter *in what order* you write them. They can always be divided by 9.

Does it work with nine 1s? Let's see!

$$\begin{array}{r} 12345679 \\ 9\overline{)111111111} \end{array}$$

Yes, the answer comes out even. Let's use that number again: 12345679. (Notice that it has no 8.)

Now try this on a friend.

N
Task Card 9

MAGIC WITH NUMBERS

Directions:

Write down your telephone number.	______________	Telephone Number
Multiply that number by 2.	x 2	Multiply by 2
Add 5.	+ 5	Add 5
Multiply the result by 50.	x 50	Multiply by 50
Add your age to the total and add the number of days in a year (365).	+ ______________	Add your age
	+ ______________	Add days of year
When this has been totaled, subtract the key number (615) from it.	- 615	Subtract key number
It will be found that of the remaining figures, the last two will show your age and the first figures your telephone number.	______________	

N
Task Card 10

PUZZLE BOXES

1. Copy the numbers as shown. Cross out six digits so that what remains will add to 20.

$$\begin{array}{r} 111 \\ 777 \\ \underline{999} \\ 20 \end{array}$$

2. Take the ten digits from 0 to 9 inclusive and arrange them in such a way that the result equals 1.

0 1 2 3 4 5 6 7 8 9

N
Task Card 11

PALINDROMES

Palindromes are words or sentences that can be read forward and backward and still say the same thing. Examples:

MADAM, I'M ADAM

NOON

Numbers may be palindromes too. Examples:

676 is a palindrome

582 is not a palindrome but will become one by reversing the number and adding.

6996 is a palindrome. It took three steps to make a palindrome from the number 582. Choose a number that is not a palindrome; estimate the number of steps it will take to get to a palindrome. What is actual number of steps it took?

$$\begin{array}{r} 582 \\ \underline{285} \\ 867 \\ \underline{768} \\ 1635 \\ \underline{5361} \\ 6996 \end{array}$$

N
Task Card 12

CASTING OUT NINES

This is a system of checking addition we have all learned along the way but put aside. Add a column of numbers. Then check for the correctness by casting out nines in each horizontal column. The sum of what is left should equal the sum of what remains in the original sum.

$$\begin{array}{rlll} 3965 & = 5 & & \\ 4581 & = 0 & = 6 \\ \underline{2341} & = 1 & & \\ 10887 & & & \\ 6 & = 6 & & \end{array}$$

What number would be cast out in base 5?

LINEUPS

The number of ways 10 people can be lined up in a single file is given by the product 10 x 9 x 8 x 7 x 6 x 5 x 4 x 3 x 2 x 1. Find this number.

EMPLOYEE WAGES

The neighborhood grocer employs three clerks, each of whom receives wages of $54.20 a week. Also employed is a delivery person whose wages are $18.75 a week. How much does the grocer pay in wages each week? How much does the grocer pay in wages in a year?

N
Task Card 15

BLACK OR WHITE?

Classify each of these words into one of two classifications, black or white.

alabaster
raven
cream
day
dull
albino
dark
jet

pale
light
bright
ivory
night
ebony
sable

ANSWERS

Task Card 5

afternoon
everything
airplane
anywhere
barefoot
baseball
clubhouse
classroom
lonesome
railroad
downtown
cornfield
evergreen
goldfish
playground

Task Card 7

blue
plum
dragon
president
clown
green
twig
chop
ship
crow

DIVERGENT PRODUCTION

INTRODUCTION

Code-D   Color - Orange

Divergent production is, according to J. P. Guilford, the "generation of information from given information where the emphasis is upon variety and quality of output from the same source. This operation is most clearly involved in aptitudes of creative potential."

Divergent activities need to be more than one hour of art at the end of the day. Divergent production should be a pervasive process that constantly presents the students with creative problem-solving in all areas, looking at the familiar in new ways, then generating new ideas.

Most of the creative thinking that is generated in the classroom is product-oriented rather than process oriented. The Structure of Intellect approach to teaching the creative process is through the development of the following components:

FLUENCY - Quantity of responses.
The ability to generate a ready flow of ideas as in brainstorming.

FLEXIBILITY - To take a different approach.
The ability to use many different approaches or strategies in solving a problem; the willingness to change direction and modify given information.

ORIGINALITY - To think in unique ways.
The ability to produce clever and unusual responses.

ELABORATION - To add onto.
The ability to expand, develop, and embellish one's ideas.

To be successful in the divergent process, one must be in an environment free from threat and judgment, and must have a willingness to be and become. This operation is often more difficult for students who find success in right answers. It is the responsibility of the teacher to create an environment in which children feel free to say, "This is the way I'm doing it." rather than always saying "Am I doing it the right way?"

Creativity is a product of:

Rich experiences
Trust in self
Openness to data
Attitudes that value change
Freedom from threat
Willingness to be and become

WHY TEACH CREATIVITY?

TORRANCE: "Creativity has long been considered the highest form of mental functioning and human development. We now realize that available general tests of mental ability do not measure accurately creative capacities or potentialities. We now know that creativity is a form of behavior that basically has to be learned. Especially exciting to teachers is the fact that certain instructional strategies are more effective than others in producing creative responses in students."

SANFORD: "Teaching for creative thinking is one of the most effective ways of implanting knowledge."

GUILFORD: "It has been abundantly shown that creative-thinking skills can be substantially increased by means of proper treatments. The first thing is to realize that creative thinking is not just one mental function; it comprises quite a variety of things."

TAYLOR: "Young people who have many experiences in turning on their creative talents will then likely use them to function effectively throughout their lifetimes. Contrarily, those students who establish non-creative patterns may continue to use only non-creative processes for the rest of their lives."

WILLIAMS: "Creativity is not possessed by only a few. It is universally found in every person and exists in a matter of degree. Every child has some creative potential; some have more than others. There is a difference in teaching creatively and teaching for creativity."

GUILFORD: "As never before, we see the need for helping youths to develop their own individual creative thinking and feeling skills."

PARNES: "Although there is much emphasis on creative teaching (the imaginative use of materials by a teacher), relatively less emphasis is being placed on the development of creative behavior in the student."

GOWAN: "On any kind of creative scale used, some individuals are found whose creative production exceeds that of their fellows, not by percentages, or even simple magnitudes; but it is more likely ten, fifty, or a hundred times as great. Obviously, these fortunately creative persons are not much different. Something has happened to turn them on."

GLOSSARY FOR SOI FACTOR DEFINITIONS FOR DIVERGENT PRODUCTION

(WISC-R Analysis)

DFC - Reclassifies perceived objects in various ways

DSU - Produces words fulfilling specified structural requirements

DSR - Generates a variety of relations between numbers or letters

DSS - Produces symbolic systems in unique ways

DST - Divergent production of transformations made to symbolic material

DMU - Ability to call up many ideas in a specified class

DMR - Produces words from given words as synonyms, or as associated words

DMS - Analogical completions

DMT - Ability to produce remotely associated, clever, or uncommon responses

DMI - Specifies details that develop a scheme or variation of an idea

DIVERGENT PRODUCTION

	F	S	M
U	DFU Elaboration--Make many designs from figures	DSU Create Words Rapid Letter and Word Naming	DMU Unusual Uses--Broad Categories Creative Titles Rapid Retrieval of Ideas
C	DFC Regroup and Reclass Figures, Open-ended	DSC Classification of Words, Letters and Numbers in Various Ways	DMC Codes, Various Uses Creative Word Collages
R	DFR Art Faces Tie Dye Designs Create Drawing Create a Toy	DSR Initials Computation Math Wheels Unique Math Computation	DMR Rhyme Production Creative Poetry
S	DFS Art--Construction Block Construction Art Designs Monograms Art Collages	DSS Money Systems and Equations	DMS Sentence Building
T	DFT Scribble Drawing Elaboration on Shapes Manipulation of Shapes	DST Vocabulary Building, Change Letters Make Words from Big Words	DMT Riddles Cartoon Responses Consequences Proverbs New Endings to Old Stories
I	DFI Elaboration in Different Ways Imaginative and Geometric Drawings	DSI Using Numbers/Letters to Make New Ideas	DMI Implications to Stories Planning Problem Solving Semantic/Symbolic Elaboration Creative Writing

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COMMERCIALLY PREPARED MATERIALS

Many of the commercially prepared educational materials can be used to supplement the activities and materials developed for SOI operations. The following lists present materials which have been coded for the divergent production operation. In some cases, it was found that the materials could be used for several different cells in the SOI model and were coded accordingly. Additional cells (codes) are indicated in parentheses.

Company	Materials	Code
Instructo	Understanding Our Feelings	DMR, DMI
Play Doh	Play Doh	DFU
M. I. Toys	Plastic Building Blocks	DFU (NFU)
Colorforms	Little Red Riding Hood Colorforms	DMS (CFR)
Toy Tinkers	Tinkertoys	DFS
Selchow and Richter Co.	Scrabble for Junior	DMU
Preschool Elementary Education	Cars, Trucks (Wood)	DFS

Books

Publisher	Title	Author
Little, Brown & Co.	*The Book of Think*	Marilyn Burns
Harper & Row	*Making It Strange 1* *Making It Strange 2* *Making It Strange 3* *Making It Strange 4* (A new design for creative thinking and writing.)	
Incentive Publications, Inc. 2400 Crestmoor Dr. Nashville, Tenn. 37205	*I Can Make a Rainbow*	Marjorie Frank
Kabyn Books Box 19663 Navajo Station San Diego, Calif. 92119	*42 Ways to Have Fun with My Mind* *52 Ways to Have Fun with My Mind* *62 Ways to Have Fun with My Mind* *72 Ways to Have Fun with My Mind*	Leif Fearn and Ursula Golisz-Benson
Good Apple, Inc.	*Dandylions Never Roar* *Anything Can Happen* *Imagination and Me* (Records and Books)	Joe Wyman and Don Mitchell

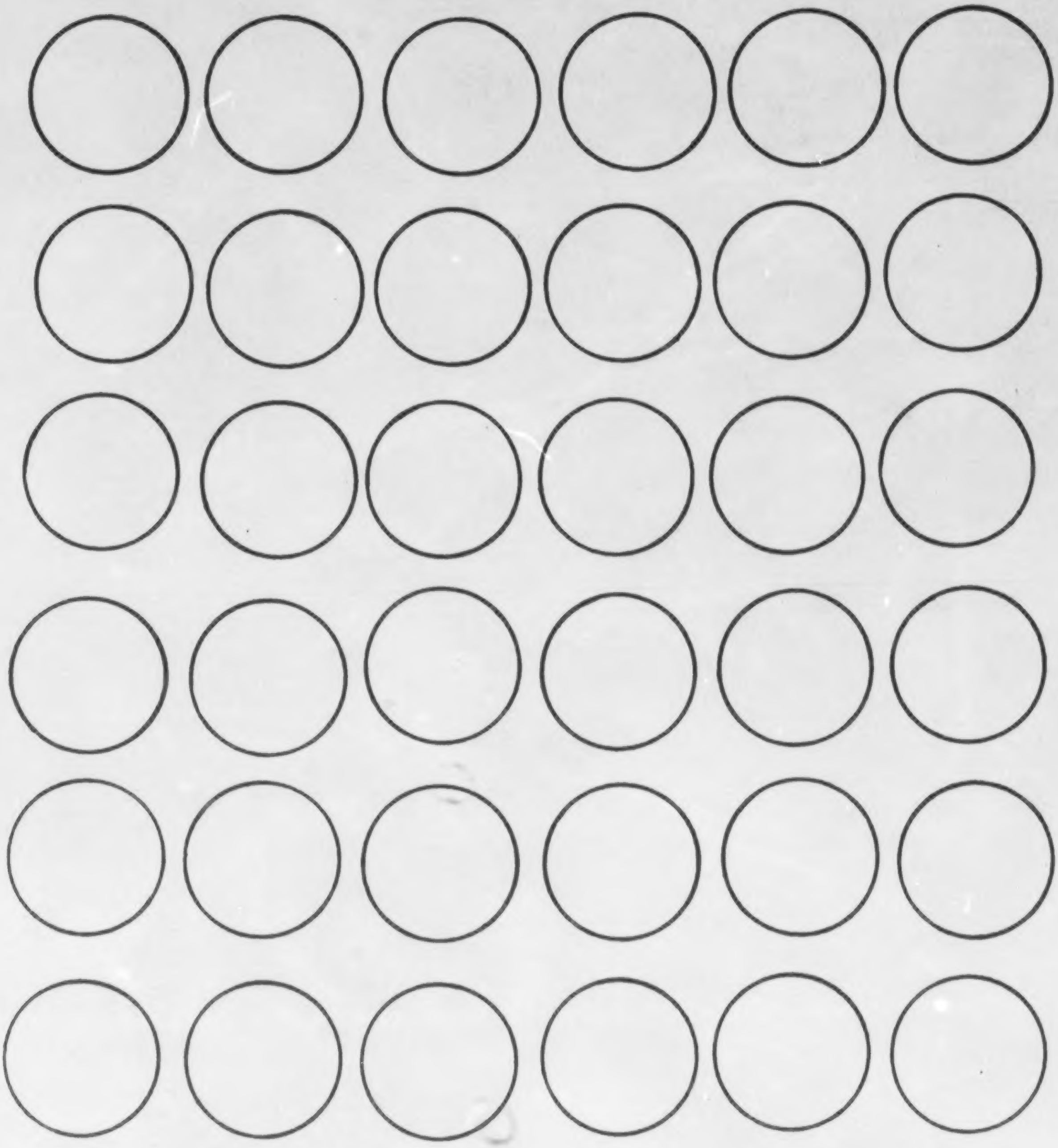
DIVERGENT PRODUCTION ACTIVITIES

Activities for the divergent production factor are presented on the following pages. The letters (code) in the upper right-hand corner correspond to the Divergent Production Activities Grid presented in the Introduction of Divergent Production section. The answers for one activity are presented at the end of the section.

DFU-1

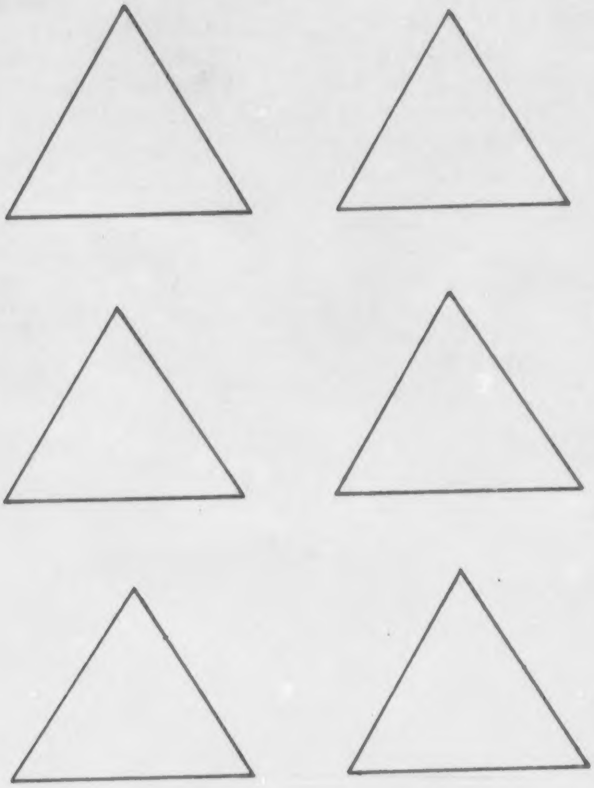
IMPROVISE

See how many objects you can make from the circles below. A circle should be the main part of whatever you make. With pencil or crayon add lines to the circles to complete your picture. Your lines can be inside the circle, outside the circle, or both inside and outside the circle. Try to think of things that no one else in the class will think of. Make as many things as you can and put as many ideas as you can in each one. Add labels or titles if the identity of the object is not clear.



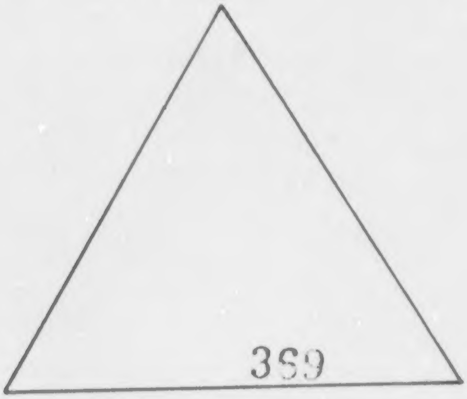
ELABORATE

Add to the figures below to make as many different pictures as you can.



Think up a story you could tell your friends or teacher about some of these pictures.

Which drawing do you like best? Repeat it here, only larger. Then add as many different new ideas to your drawing as you can.

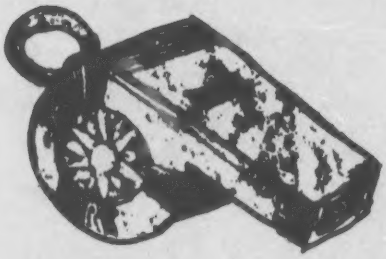


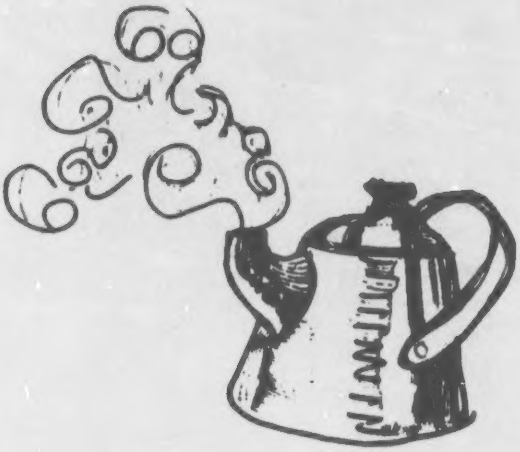
Title: ______________________

DFR-1

THINK TWICE

Why is a whistle



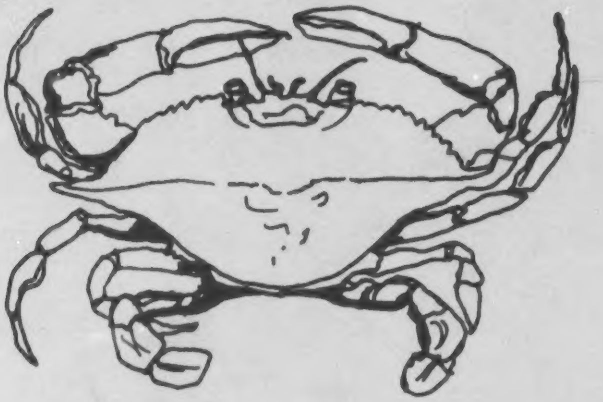


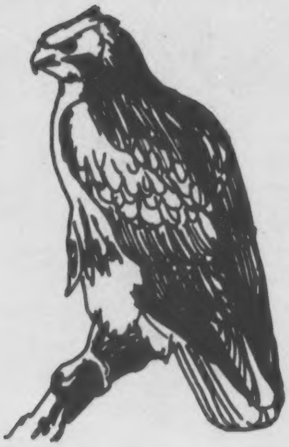
like a teakettle?

Are they alike in any other way?

Why or why not?

Why is a crab

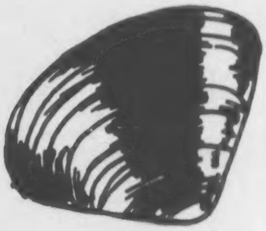




like a hawk?

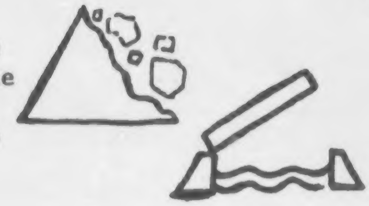
Are they alike in any other way?

Why or why not?



Are a crab and a clam alike? How?

SAY IT WITH SYMBOLS
(Originality)



The signs along our highways often use pictures or symbols to give directions to drivers. A good symbol should enable the driver to recognize its meaning instantly so that he/she knows what to do. Imagine that you are a designer who has been asked to design a symbol for each message below. Draw your symbols in the spaces provided.

Bumpy Road

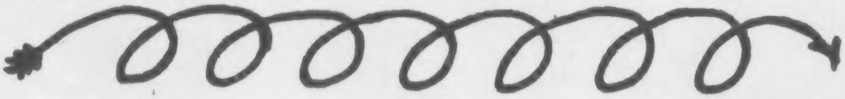
Narrow Bridge

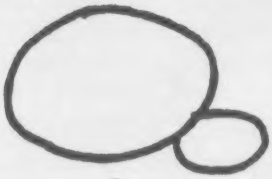
Animal Crossing

Slippery Road

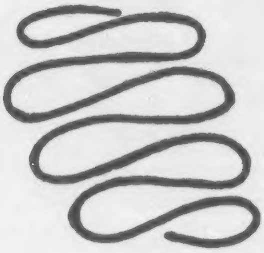
WHAT AM I?
(Elaboration)

These designs may suggest many different things to different people. What does each one suggest to you? Write a sentence about each one. For instance, when my cousin turns somersaults, he looks like this:





1



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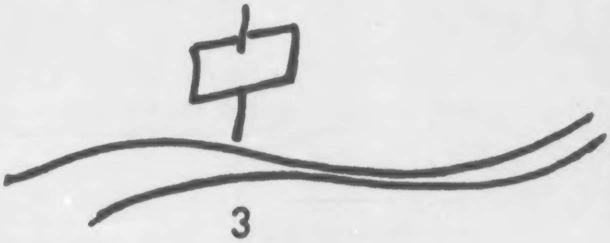

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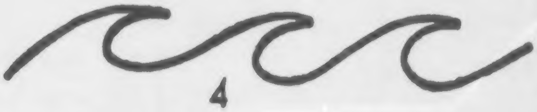

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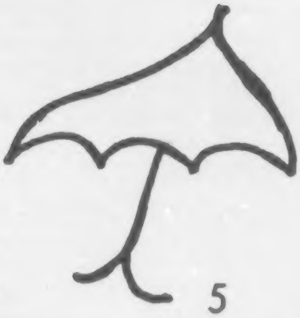

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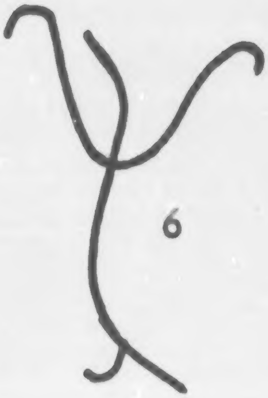

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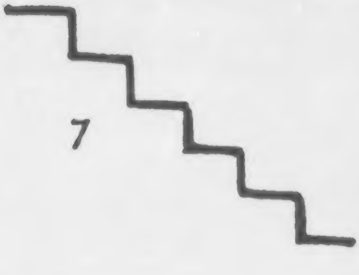

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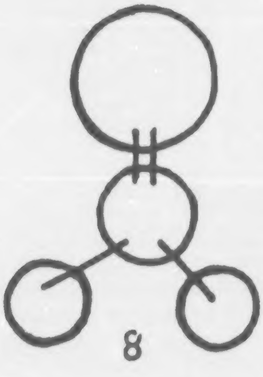

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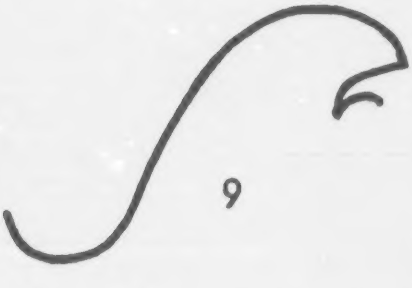

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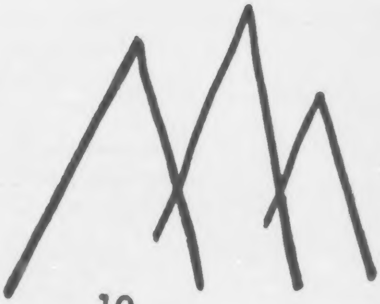
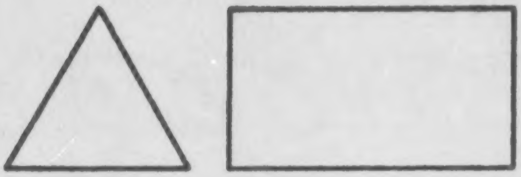
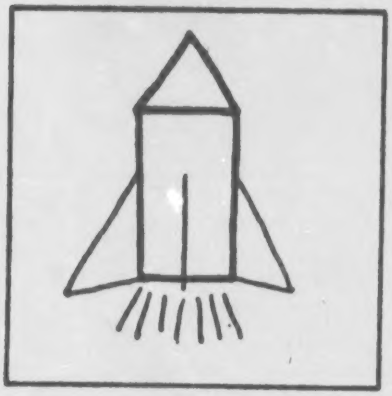


10

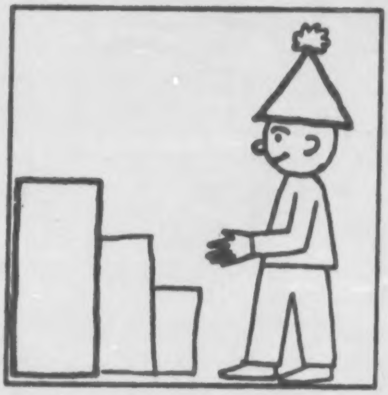
FIGURE ARRANGEMENT
(Flexibility, Originality)



Use the two figures above to make a drawing in each of the boxes below. Give each of your drawings a title. Try to make your drawings and titles as interesting and as unusual as possible. The figures can be placed anywhere in the box and can be turned in any direction. You may make the figures as big or as small as you like. Choose your favorite to draw on a large sheet of paper.



Title Blast off!



Title The clown climbs the stairs.

Title ______

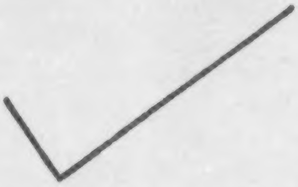
Title ______

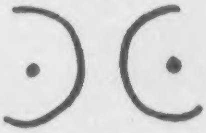
Title ______

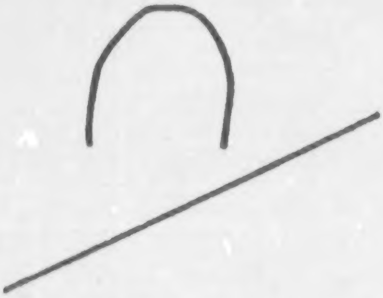
Title ______

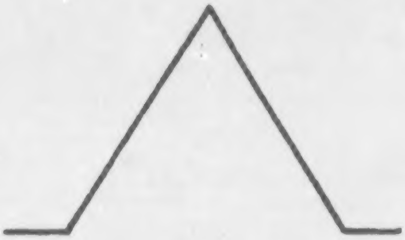
STARTING LINES

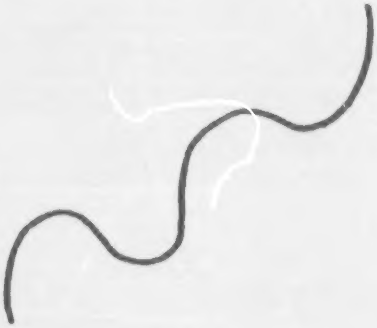
Elaborate upon the given lines in such a way that your work will result in something most people will recognize. The given marks must be included as part of the figure you create.

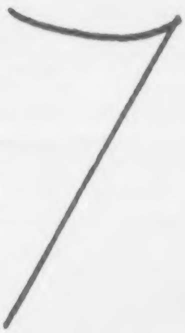


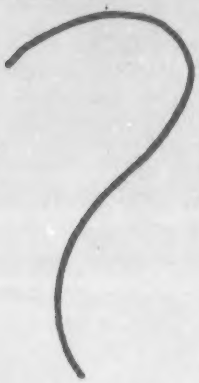


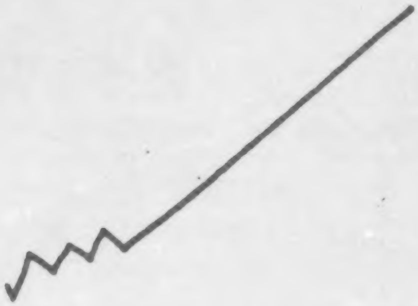


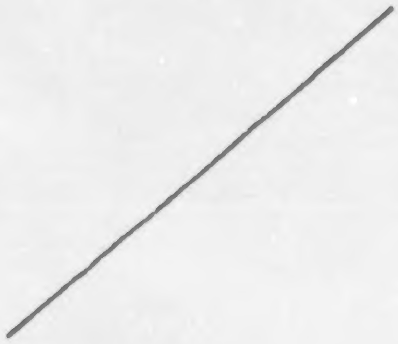


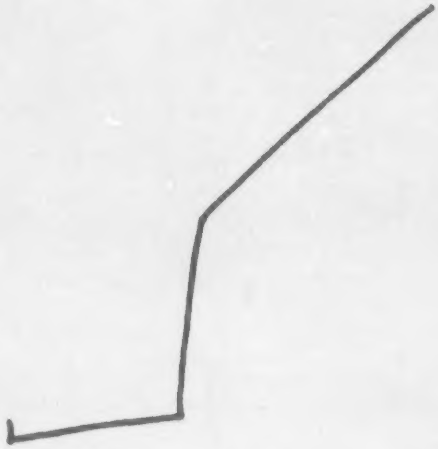


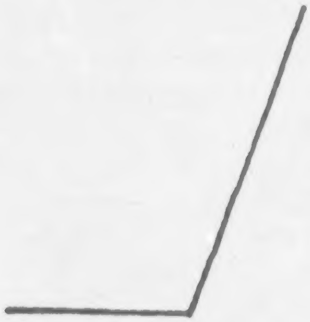


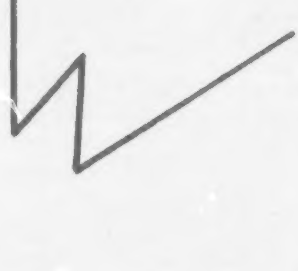






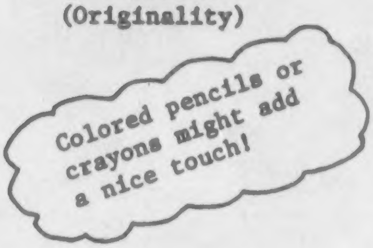




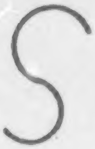


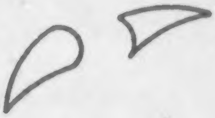
"MAKFRUMS"
(Originality)

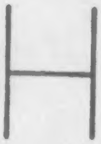
Think divergently!

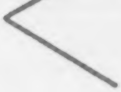

Colored pencils or crayons might add a nice touch!

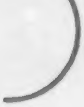
What can you make from these "makfrums"?

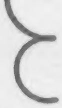


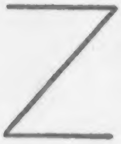


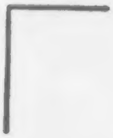


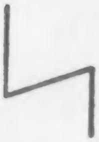


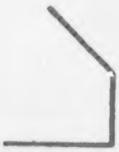


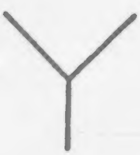


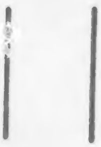




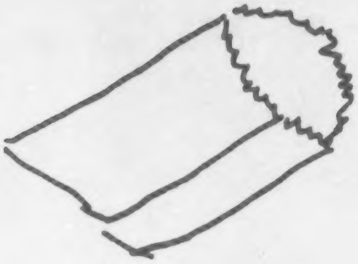


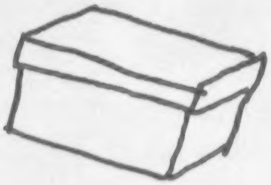






ORIGINALITY PLUS!





Begin with an ordinary paper bag or a small cardboard box.

Create something unusual and original from your bag or box.

Remember to think:

Fluency

Flexibility

Originality

Elaboration.

Don't tell anyone what you are making.

Materials you might want to use:

Rickrack
Sequins
Fabric
Cotton
Buttons
Pipe cleaners
Construction paper
Yarn
Glue
Scotch tape
Newspaper
Scissors
Stapler
Masking tape
String
Thread

Note to the teacher: Near the end of the activity stop the class and let students share what they are making. Discuss ways to elaborate to make their creations even more unusual.

AS A CLASS PROJECT, SEE HOW MUCH "JUNK" YOU CAN COLLECT. (SEE LIST ON NEXT PAGE.) ALL OBJECTS COLLECTED WILL BELONG TO THE CLASS. IF YOU BRING SOME SPECIAL "JUNK" FOR YOUR OWN PROJECT, KEEP IT SEPARATE.

SELECT THE "JUNK" YOU WANT TO USE.
BRAINSTORM ALL THE THINGS YOU COULD MAKE.
CREATE YOUR BEST IDEA. NAME IT.

EVALUATE YOUR INVENTIONS (See "Evaluation of Thinking.")

Suggested "Junk" Items for Children to Bring to School

Pipe cleaners

Tabs from aluminum cans

Styrofoam packing materials

Thread, yarn, string

Material (fabric)

Metal objects (nuts, bolts, etc.)

Cardboard

Paper, paper cups

Parts of old toys

Wire

Used flash cubes

Paper clips

Bottle caps

Small bottles

Other Materials Needed

Newspapers (to cover desks)

Glue

Scissors

Crayons

Tape

Felt pens

Evaluation of Thinking

This evaluation may be an oral discussion or done in writing under the teacher's direction. Suggested questions to begin discussion:

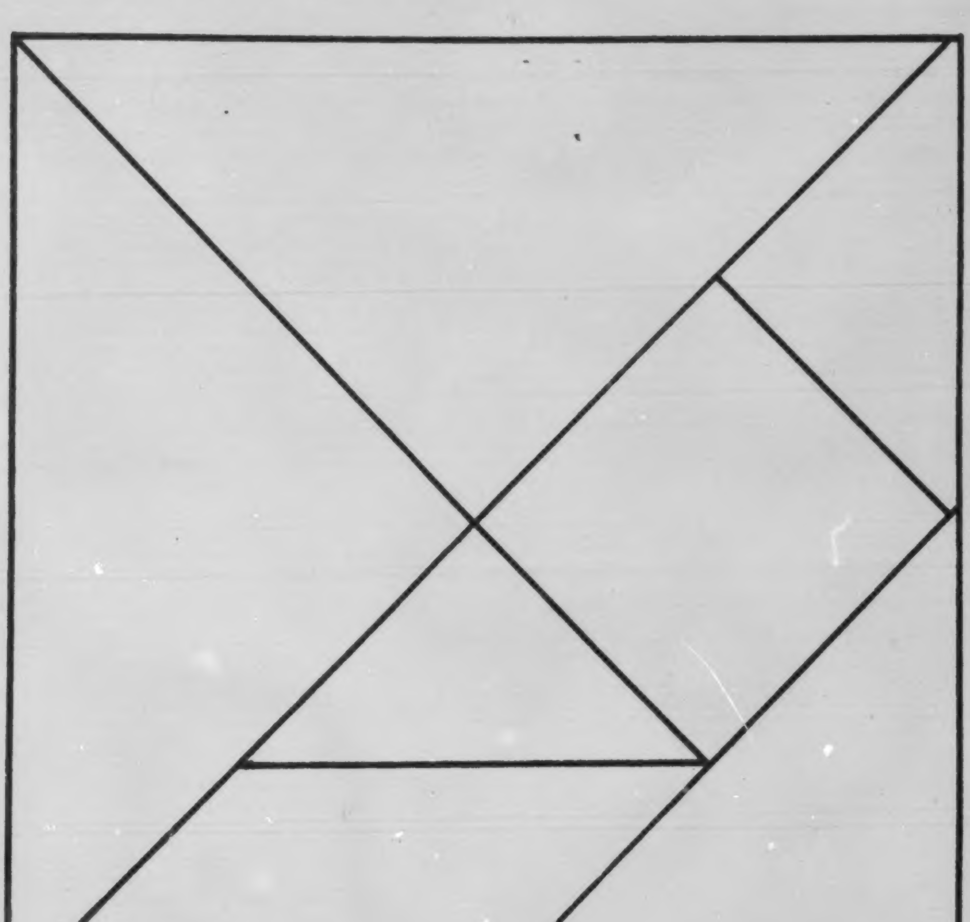
1. Did you have an idea that you thought would work when you started?
2. Did you end up with the same idea that you started with?
3. If not, did your ideas change several times as you were creating?
4. Was it easy to shift your plans or were you frustrated when things didn't come out as you had planned?
5. Did you come up with any idea by chance or by accident?
   If so, did you build on that idea and add to it?
6. Did you try to combine unusual objects and use them in new ways?
   If so, how did they turn out?
7. Do you feel you learned anything about yourself from doing this?
   If so, what?

A CHINESE DRAWING

The drawing below is called a tangram (tang'ram) which means "Chinese drawing." It is a favorite puzzle among the Chinese people. Use the pattern below. Paste it on cardboard, and then cut the square into pieces as marked. See how many interesting patterns or designs you can make, using all seven pieces. Over 300 can be made!

Other tangram tasks:

- Form letters of the alphabet with the Tangram pieces.
- Form an animal using all of the pieces.



Set a time limit of 15 minutes. Create as many objects as you can in the time limit. How many different things did you create?

CHANGING WORDS

Discuss rhyming words and words that begin and end alike.

Write the word *make* on the chalkboard and have students respond orally with as many words as they can that contain the same vowels in the same order, but with different consonants.

Using "Words for Cards" (on the next page), give each student a card on which is written a simple word. Students list on paper as many words as they can that contain the vowels in the same order but with different consonants.

This activity can be repeated using nonsense words.

Words For Cards

table	crayon
used	button
hole	tiger
frame	rope
poke	tale
cute	rice
paper	waste
bike	

Nonsense Words

wedo	zemo
goze	turzen
vofe	jabe
qidden	kace
gare	wectob
yume	cime
fijke	hoje

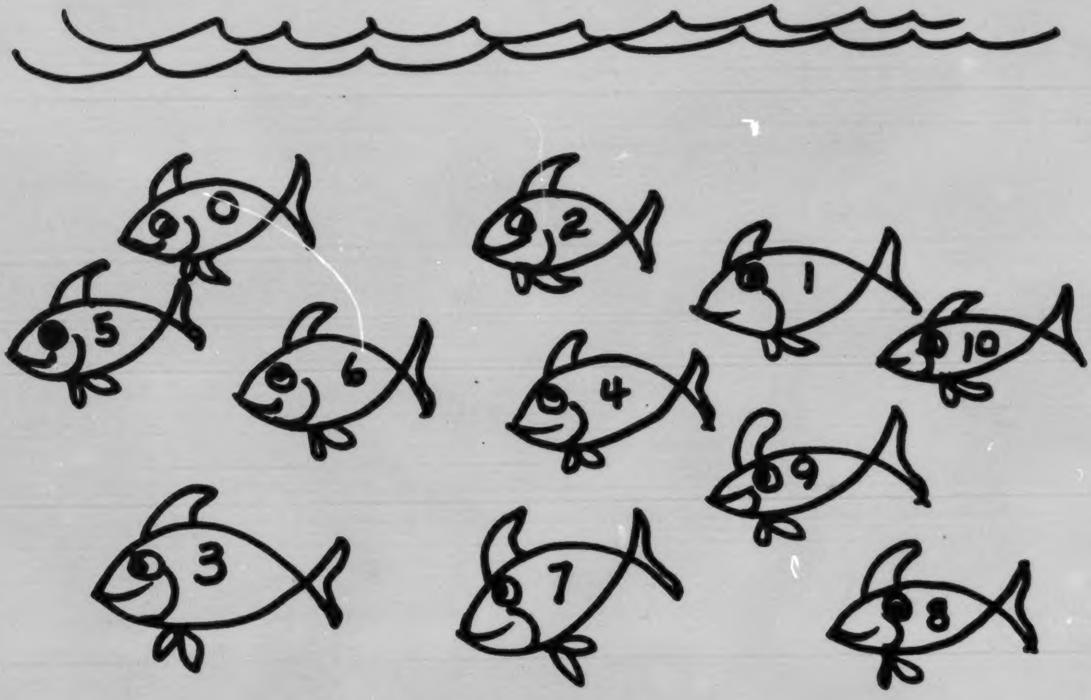
binnen

FISH FOR NUMBER SENTENCES

Make as many number sentences as you can by using the numbers below.

Example	Example
2 + 6 = 8	9 - 4 = 5

Set a time limit. See who can make the most sentences.

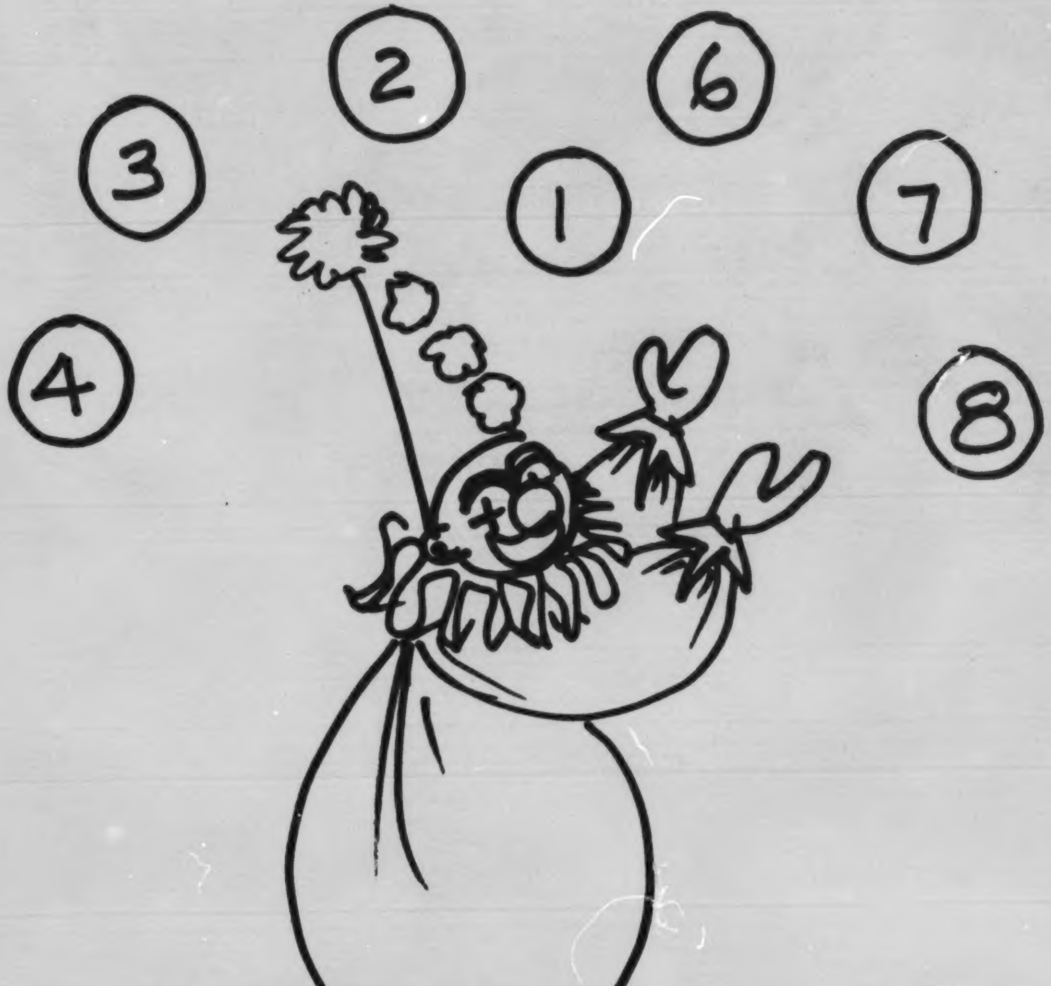


How many number sentences can you make from Bozo's balloons?

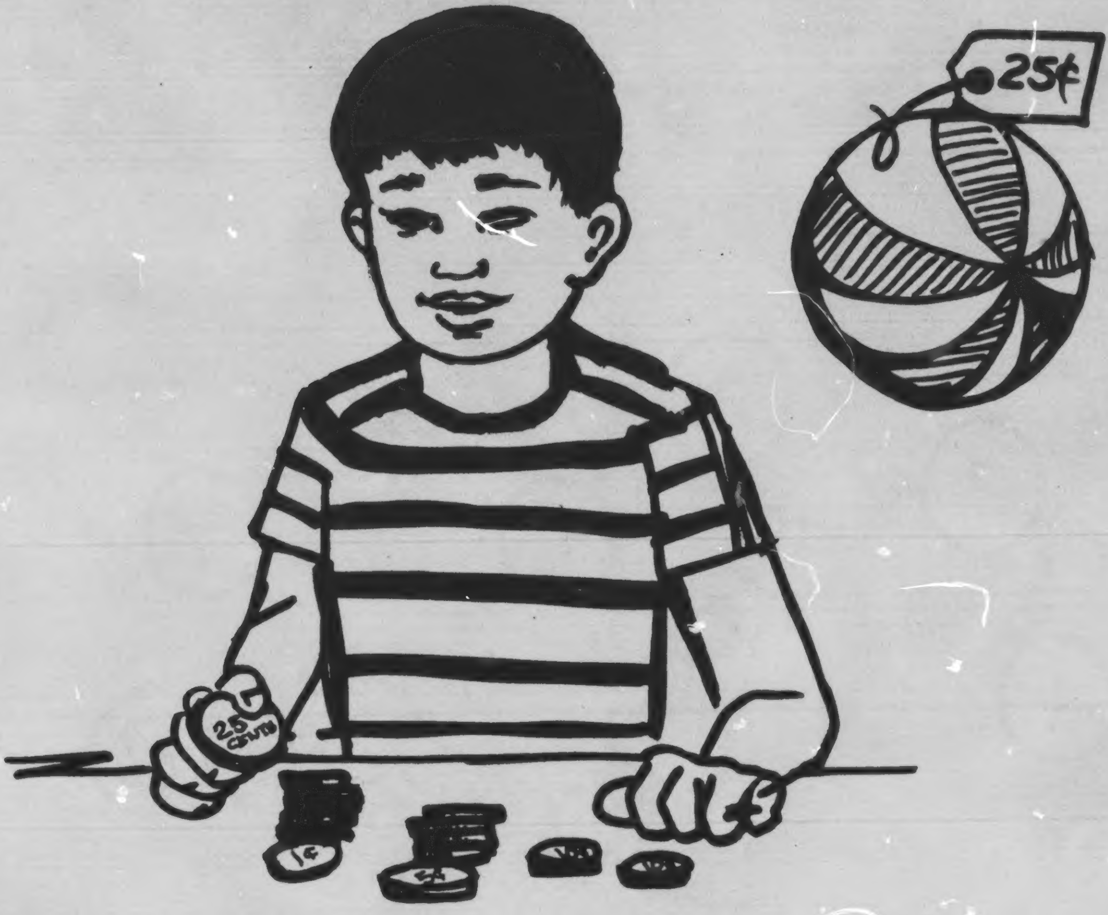
Example:

3 + 4 = 7

2 x 4 = 8



SHOPPING



Tom wants to buy the ball for 26¢. Write down all the different combinations of coins he could use. How many combinations are possible?

DSS-1

TOP SECRET

You can invent your own code. Fill in the blanks below, each with a different symbol.

a	b	c	d	e	f	g	h	i	j	k	l	m

n	o	p	q	r	s	t	u	v	w	x	y	z

Use your code to write a message, story, letter or note. Trade with a friend to decipher.

```
          P

          U

          Z

          Z

  C       L

C R E A T E

  O       S

  S

  S

  W

  O

  R

  D
```

You need:

-Graph paper

-Pencil

-List of words (You can use your spelling words or any list of words you are studying. Or make up your own list.)

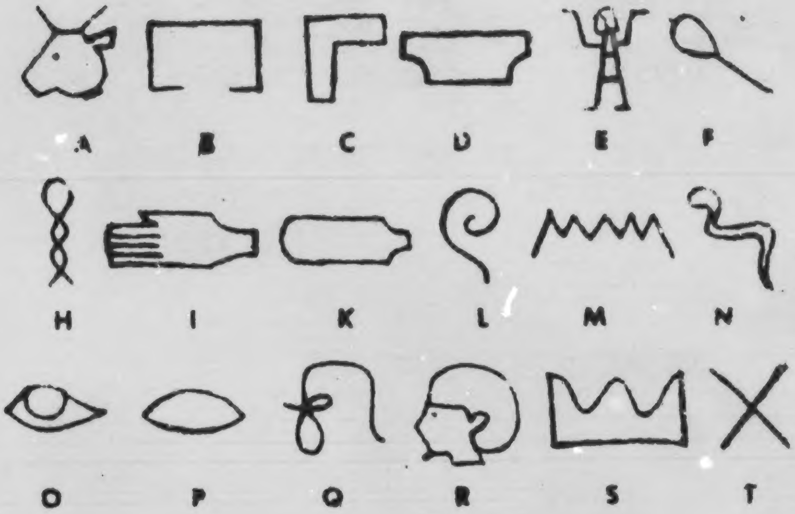
Construct your very own crossword puzzle using creative and clever clues. Clues can be in the form of alliterations, rebus, similes, proverbs, or any other type of play on words.

Be original!

Note to the teacher: Some students may need to work with crossword puzzles prior to creating their own in order to become familiar with form and construction.

SAY IT WITH PICTURES

The ancient Egyptians sent messages to each other in pictures called *hieroglyphics*. Say: hy-ro-GLIF-ics. Use the symbols below to write a message. Notice that there are no pictures for the letters G, J, U, V, W, X, Y, and Z. Use our alphabet when you need to. Exchange messages with a friend and decode.



BRAINSTORMING

OSBORN'S FOUR BASIC RULES FOR GENERATING ALTERNATIVE HYPOTHESES

1. CRITICISM IS RULED OUT. adverse judgment must be withheld until later. Judgment is deferred.

2. "FREE WHEELING" IS WELCOMED. The wilder the idea the better. It is easier to tame down than to think up. A wild idea may trigger just the "right" idea. A nonrational idea may suggest a sound, useful one.

3. QUANTITY IS DESIRED. The greater the number of ideas, the more the likelihood of winners. An obvious, small idea may stimulate an unusual, big idea.

4. COMBINATION AND IMPROVEMENT ARE SOUGHT. Hitchhiking is encouraged. In addition to contributing ideas of their own, group members should suggest how the ideas of others can be turned into BETTER ideas or how two or more ideas can be joined into still another idea.

IDEA SPURRING WORDS

S Substitute (material, color, function, quality, etc.)

C Combine (unite, join, embody, assimilate, blend, etc.)

A Adapt, add (conform, regulate, adjust, fit, etc.)

M Magnify (all, make larger, multiply, stronger, etc.)
Minify (subtract, divide, make smaller, etc.)
Modify (transform, alter, vary, moderate, etc.)

P Put to other uses (as is, altered, reversed, etc.)

E Eliminate

R Reverse (invert, transpose, other side, other end, etc.)
Rearrange (what are component parts, how else used, etc.)

With any idea the above spurring words can be used to enlarge your store house or pool of ideas, hypotheses, possible solutions, and so on.

Criterion: A yardstick, a standard of judging; a rule to test by which anything is tried in forming a correct judgment respecting it. Each hypothesis and every hypothesis is judged by one criterion and then by the second criterion and so on until every idea (hypothesis) has been evaluated by each criterion. Finally, a decision is made about the best hypothesis. Then an effort is made to improve this hypothesis and make it a better one.

⑫ 24 130

15 3 36

LET ME COUNT THE WAYS

82 16 8 5 2

Give each student a card, "How many ways..." (See following pages.)

Students record as many words as they can in three minutes.

Students pass cards and begin with a new card for three additional minutes.

Pass cards three to four times.

Share lists.

This activity can be repeated. Have the students brainstorm new "How many ways..." questions to be used.

"How many ways..."

How many ways can a tree look?	How many ways can a castle look?
How many ways can a lion roar?	How many ways can an apple look?
How many ways can a sunny day feel?	How many ways can a person speak?

"How many ways..."

How many ways can sandpaper feel?	How many ways can a haunted house look?
How many ways can a camel move?	How many ways can a scream sound?
How many ways can an ice cream sundae taste?	How many ways can a fish swim?

ALTERNATE USES

We can often find uses for things that were originally intended for some other purpose. For example, children sometimes use old boxes for doll houses or as a place to keep their toys. For each of the following objects, list as many interesting and unusual uses as you can think of. Let your mind wander, and try to think of some uses that no one else has ever thought of. List all the ideas that come to mind, even if they seem silly or impractical. You may change the objects to suit your purposes. Use the back of this page if you need more space.

Old automobile tires

Cut them up and make sandals with the pieces.

Use them as hoops in a ringtoss game for giants.

Old newspapers

DMU-4

FLUENCY HAS A BETTER IDEA!!!

1. Think of all the possible ways you could get to *school in the morning.*

______ ______ ______

______ ______ ______

______ ______ ______

______ ______ ______

______ ______ ______

2. Think of all the ways you could peel a banana without using your hands.

______

______

______

______

______

______

______

3. Think of all the titles you can for a new popular song.

______

______

______

______

______

______

THE PAPER CLIP

Turn on your imagination and list as many different uses for a paper clip as you can think of. If you need more room, feel free to use the margins or continue on another sheet of paper. Do this activity by yourself or brainstorm with a small group.

1. ____________________ 11. ____________________
2. ____________________ 12. ____________________
3. ____________________ 13. ____________________
4. ____________________ 14. ____________________
5. ____________________ 15. ____________________
6. ____________________ 16. ____________________
7. ____________________ 17. ____________________
8. ____________________ 18. ____________________
9. ____________________ 19. ____________________
10. ____________________ 20. ____________________

THE PENCIL

Turn on your imagination and list as many different uses for a pencil as you can. If you need more room, feel free to use the margins or continue on another sheet of paper. Do this activity by yourself or brainstorm with a small group.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________

WHAT EVERYONE SHOULD KNOW ABOUT BRAINSTORMING BUT WAS TOO BUSY TO ASK

I. Purposes of brainstorming

  A. To create a great number of ideas which lead to more quality in those ideas.
  B. To open people up to sharing ideas without fear of criticism.
  C. To enable members of the group to build on each others' ideas.

II. Procedure

  A. The leader states a definite problem.

    1. Make it specific and simple.
    2. Examples:

      a. Name everything you can think of that is soft, white, and edible.
      b. What other uses can you think of for a TV tray?
      c. In what ways would you improve a school pencil to make it easier to use?

  B. State the rules for brainstorming.

    1. No criticism. All ideas are accepted.
    2. Make your ideas free wheeling, as way out as you want to make them.
    3. Build on the ideas of others. Someone may give you an idea you can elaborate upon.

  C. Restate the problem and as the children give their ideas, list them on the chalkboard with NO comment.

  D. After 15 to 20 minutes, stop the brainstorming and comment on the amount and variety of responses.

  E. Evaluate each idea by using standards you have set up, such as:

    1. Does it actually solve the problem, or does it create new ones? (Does it build or help society?)
    2. Is it possible to use the idea either now or in the near future? (Is it practical?)
    3. Are human beings really able to handle it? (is it compatible with human beings?)

  F. Leave on the chalkboard those ideas the children decide meet the criteria.

III. After brainstorming, discuss feelings and how the ideas came about.

IV. Each child may take any idea and develop it on his/her own by:

  A. Making a labeled diagram or design of the idea or object.
  B. Making a model of the idea.
  C. Writing an explanation of his application of the idea.
  D. Creating an "invention" of his own by combining the ideas from the chalkboard.

LIST BEFORE YOU LOOK

Making lists is another way to take on problems. Mostly people make lists to help them remember things. Like shopping lists. Or chores. Or homework assignments. Things that have to get done.

Another use for lists is to help you think. In two ways. By looking at things in different ways. By looking at things in more ways.

Here are some list-making warm-ups. You can do these exercises alone or with a friend. Comparing lists is fun. (Don't use skimpy pieces of scratch paper. Give yourself some space to list.)

Things You Know

These are things you need to pull out of your memory. The idea is to list lots. No time limit. Stop when you've thought of all you can.

List all the foods you can think of that are yellow.
List all the games you know for two people to play.
List all the things that bug you.
List all the ice cream flavors you can think of.

There are some things you should notice while you're listing. How did you get started? After you've listed all the easy ones, what did you do? How did you decide when to give up?

Things That Could Be

These lists are not of things you know. They are of things you could do with what you know. This time, set a time limit for each list. Two minutes.

List all the uses that could be made of an empty tin can.

List all the ways you could make a skateboard go uphill by itself.

List all the ways that a kid could earn money.

List all the things you could do to improve where you live.

How did this kind of list compare with the first warm-up? Did the time limit make a difference? Which lists were longer? Which were more fun to do?

FLUENCY GAME

Discuss the word *fluency*.

Divide the group into teams.

Assign a topic for the team to brainstorm, such as uses for an umbrella.

Allow 5 minutes for team brainstorming and listing.

Discuss lists and record ideas on chalkboard.

Students return to group and add to their lists something no one else has thought of.

Discuss: How does the second list differ from the first?

CRUNCH, MUNCH
(Fluency, Flexibility)

Some of the words in our language imitate sounds. Think about each sound listed below and then see if you can think of a few words that describe that sound. Don't be afraid to make up some words of your own. A few examples are given to help you get started.

The sound of people eating potato chips

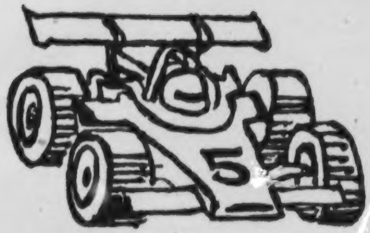
crunch, munch, chomp

The sound of church bells ringing

The sound of logs burning in a fireplace

The sound of a typewriter in action

The sound of racing cars in a race



WRITING SOLUTIONS

Try writing some solutions to the situations listed below. See one situation to brainstorm at a time.

1. Write as many ways as possible to handle being lost in a cave and having laryngitis.

2. List as many ways as possible to get into your locked car without damaging any property.

3. How many ways can you think of to open a paint can that has a stuck lid?

4. How many ways can you think of to earn money for a bike?

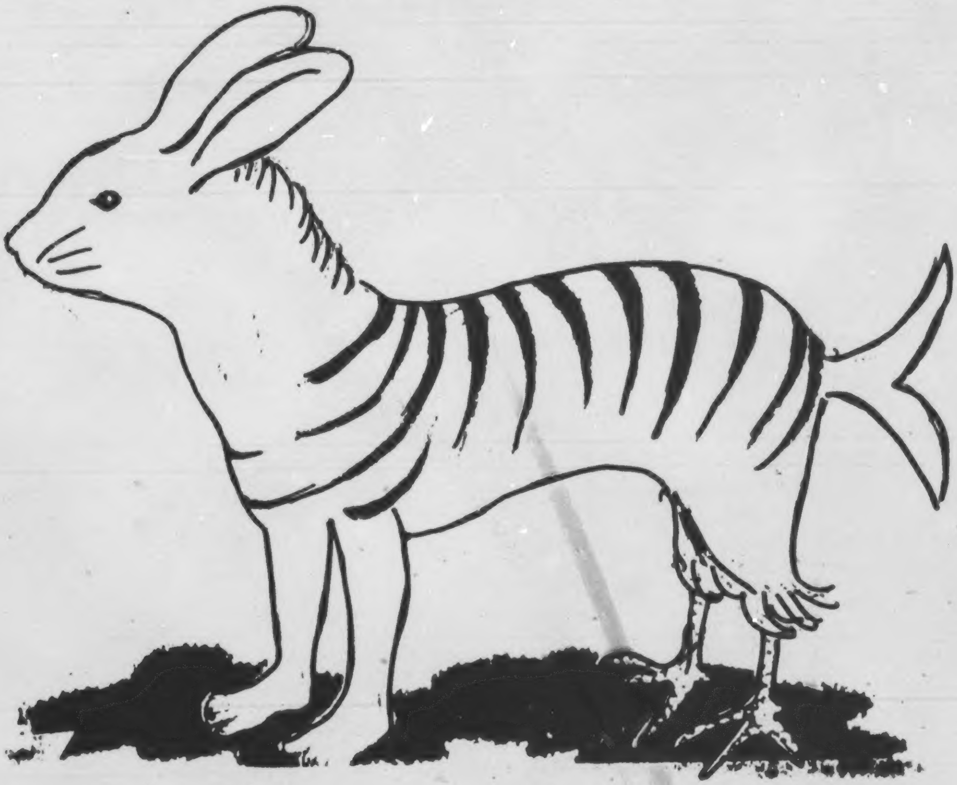
5. How many ways can you think of to improve almost anything!

   -Your chair
   -Your teacher's desk
   -A pencil
   -And on and on

INVENT AN ANIMAL

Study the imaginary animal pictured and described below, and then create your own imaginary animal, combining the attributes of two or more real animals. Draw a picture of your animal. Describe it and write a story about it.

(A) THE RABGERISH (Name of imaginary animal.)



(B) This is a timid, wild animal who loves to eat sea carrots. (Description.)

(C) As he was grazing around the bottom of the ocean munching on sea carrots, he stubbed his big toe. (What happens to it.)

(D) "My feet hurt!" (What it might say.)

DMS-2

ONE...

Finish this story. Use 1 or one as many times as you can.

One day Mary wanted to buy one gumball. Mary met one of her friends one block away from the store.

Kathy said, "I have only 1 penny, Mary."

"That's funny. I have ______________________________

You might want to try another story using the words two, to, and too.

SENTENCE SYSTEMS

The first letter of each word is given below. Using these letters make 5 different sentences.

E ________ m ________ g ________ f ________ r ________

E ________ m ________ g ________ f ________ r ________

E ________ m ________ g ________ f ________ r ________

E ________ m ________ g ________ f ________ r ________

E ________ m ________ g ________ f ________ r ________

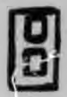
Many versions of this activity can be created by using different letters. Or write the letters on small squares and let students draw five letters.

TRIXIES

Trixies are disguised words. If you find the word *I* directly under the word *stand* you know that this represents "I understand." If you see the word *shall* in small letters enclosed in the word *deed*, you can correctly conclude that this combination is "shall indeed." To start you off, the answer to No. 1 is: "To overthrow the U.N. would incur a dark period in history."

1. 2
Throw the UN IN wood CUR HIS●TORY

2. estimate whose ( )
Don't

3. The ,  and the TEN
8 slept

4. EX 2B AMS does SU not RE 6S
confident

5. Hill
John
Mass

6. VEST a fine MENT when UR* O

7. Stand TE^{u}ND 2 Taking
I Throw my

8. She herself DIG with NATION

A LION STORY

A big lion came into the desk and ate all the walls. He was so shiny he never had enough to think so airplanes kept away from him. He galloped through the table, flew up to the door and hit his beak on the wastebasket. He was so long he met his stem as he came through the other window. He liked to sleep through the rain, but other chickens wouldn't talk to him. His squeak was out in the dark and so many people would not travel with him. He left the carpet and decided to go back to the bank and leave as he came in through the lamp. He was often in the chair but took good care of his ear.

Rewrite the above story, substituting your own words for the words in the story that do not make sense.

Share your stories with the class.

"I COULD HAVE BEEN, BUT..."

Discuss originality. Discuss the fact that the ability to transform words or ideas into clever or unusual responses is an asset to anyone's speech or writing. Try this activity:

Introduce examples of "I could have been, but..." The students should be asked to think up an unusual or clever response to the following examples:

I could have been a firecracker (but my pop wouldn't let me).

I could have been a chimney (but I wasn't allowed to smoke).

The teacher should point out that the antecedent must be related to the product or consequence.

Divide class into three to four groups and give each group three to four cards of antecedents. (See following pages for cards and possible solutions.)

Groups brainstorm for clever responses to antecedents.

After 10 minutes bring groups together to share their responses.

Break into groups once more to brainstorm their own antecedents and consequences or products.

Bring groups back once more to share their antecedents and consequences or products.

DMT-4
(Cont.)

Antecedent Cards

1.

I could have been a tower but ______

____

____

2.

I would have been a knife but ______

____

____

3.

I could have been the wind but ______

____

____

4.

I could have been a tailor but ______

____

____

5.

I could have been a steam roller but

____

____

6.

I could have been a magician but ____

____

____

7.

I would have been an electrician but

____

____

8.

I would have been a clock but ______

____

____

9.

I would have been an actor but ______

____

____

10.

I would have been a piece of elastic

but ______________________________

____

11.

I could have been a window but ______

____

____

12.

I could have been a door but ______

____

____

13.

I could have been a light but ______

____

____

14.

I could have been a circle but _____

____

____

15.

I could have been a trumpet but ____

____

____

16.

I could have been a picture but ____

____

____

17.

I could have been a verb but _______

____

____

18.

I could have been Tarzan but _______

____

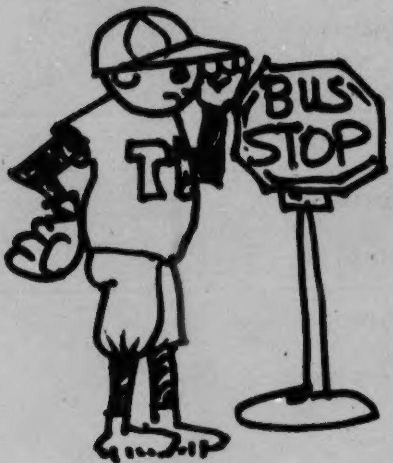
____

416

Possible Solutions

1. ...I wouldn't stand for it.
2. ...I couldn't cut it.
3. ...I blew it.
4. ...it just didn't seam right.
5. ...it was too depressing.
6. ...my ambition kept disappearing.
7. ...the idea shocked my parents.
8. ...that was too alarming.
9. ...I couldn't play the part.
10. ...but that would be stretching it.
11. ...it was a real pane.
12. ...I wouldn't handle it.
13. ...I wasn't bright enough.
14. ...I wanted to go straight.
15. ...the idea was band.
16. ...I was framed.
17. ...I was too tense.
18. ...I couldn't swing it.

INEPTITUDES



Notice the play on words in each example. Try to create more silly examples like these.

1. The artist who couldn't draw flies.
2. The owl that doesn't give a hoot.
3. The secretary who isn't the type.
4. The chauffeur who can't drive a nail.
5. The outfielder who couldn't catch a bus.
6. The undertaker who wouldn't bury the hatchet.
7. The dermatologist whose patients got under his skin.
8. The puppeteer who wouldn't string along.
9. The butcher who made cutting remarks.
10. The weight-lifter who couldn't raise the rent.

ALLITERATIONS

An alliteration is the placing together of two or more words beginning with the same or closely similar words.

Short Alliterations

1. Busy bee
2. Fair or foul
3. Higgledy-piggledy
4. Now or never
5. Spick and span

Long Alliterations

1. A noise annoys an oyster but a noisy noise annoys an oyster more.
2. How much wood would a wood chuck chuck, if a wood chuck could chuck wood.
3. Sister Susie, seated serenely on the satin sofa, sews silk socks.

Longer Alliterations

1. She sells sea shells on the sea shore. The shells she sells are sea shells I'm sure; and if she sells sea shells on the sea shore then I'm sure she sells sea shore shells.

2. Swan swam over the sea
   Swim swan, swim
   Swan swam back again
   Well swum, swan!

3. A skunk stood on a stump. The stump thunk the skunk stunk
   But the skunk thunk the stump stunk.

Alliterative Proverbs

Many proverbs owe much of their popularity to alliterative appeal. Not only do like sounds please the ear, but they assist the memory. Here are a few:

1. The fat is in the fire.
2. As fit as a fiddle.
3. Last but not least.
4. Practice what you preach.
5. A barking dog seldom bites.

Now see what you can do. Be divergent and think up some alliterations and alliterative proverbs of your own.

DMT-7

STRETCHING EXERCISES

What FOOD is like SHOE LACES?

____

Why? ____

____

A SNOW-TOPPED MOUNTAIN is like

______________________________ because ___________

____

____

What ANIMAL do you think is like a BALL?

____

Why? ____

____

____

What LIVING THING do you think is like a BULLDOZER?

____

Why? ____

____

____

____

DMI-1

WHAT AN IMPROVEMENT!!!!

Try to use your originality and flexibility in making some object better. Remember some of the things you can do to improve on what we have now.

Look at the attributes (characteristics) of the object and decide how you could change them.

-MAGNIFY the object or its parts........make them bigger.
-Minify....... make the object or its parts smaller.
-Add +++++++++ other things to the object.
-Subtract ---- and substitute other materials, colors, designs.
-Rearrange the parts of the object, put them in better places.

NOW select one object from below by placing your pencil in the middle of the circle and giving it one twist. Where your pencil lead points will determine your object.

SHOES

Automobile
Electric Lamp
Record Player
Dog Food
Bicycle
Telephone
Bed
YoYo
Textbook
Pen
Ice Cream Cone
Baseball Mitt
Address Label
Coat or Jacket
Bathroom Scale

Next, brainstorm all improvements you can find.
Then, design and label your improved objects.

WHICH IS FASTER - A TABLE OR A CHAIR?

In this lesson you will compare things that usually are not compared, so let your imagination guide you. There are no right or wrong answers. Pick the word that excites you, and circle it. Then explain your choice.

Which LASTS longer?

AN ICE CUBE A COOKIE

Why? ____

____

____

Which is QUIETER?

A KNIFE A WHISPER

Why? ____

____

____

Which **WEIGHS** more?

A SCREAM A BAG OF POTATOES

Why? ______________________________

____

____

____

Which is **FASTER**?

A TABLE A CHAIR

Why? ______________________________

____

____

____

DMI-3

ASSIGNING REASONS TEST

Below are some questions to which you are asked to assign short, one-line reasons. Your reasons should be plausible, although it is perfectly all right if they are unusual. A good reason is one which after hearing it, the listener might say, "Yes, that is a distinct possibility which I didn't think of."

Example: *A* agreed to sell *B* his car and *B* agreed to buy it. But when *A* brought the car to *B*'s house, no sale was made. Why?

a) *B* had died.
b) *B* had disappeared.
c) *B* went back on his word.
d) The car was not in the shape *A* had represented it to be.
e) *A* did not have full title to the car.

Remember to make your answers both plausible and unusual. Keep them short.

1. Why do people wear clothes?

a) ______________________________
b) ______________________________
c) ______________________________
d) ______________________________
e) ______________________________

2. Why did Miss Jones quit teaching?

a) ______________________________
b) ______________________________
c) ______________________________
d) ______________________________
e) ______________________________

3. *B* wished to buy meat, and *S*, a storekeeper who had meat on hand, wished to sell some. But no sale took place. Why?

a) ______________________________
b) ______________________________
c) ______________________________
d) ______________________________
e) ______________________________

Assigning Reasons Test (page 2)

4. *C* was a candidate for president of a club. In the balloting no one received more votes than *C*, yet *C* did not become president. Why?

a) ____________________

b) ____________________

c) ____________________

d) ____________________

e) ____________________

5. A bank was informed that a robbery was going to take place. Nevertheless the robbery was carried off successfully and the robbers escaped. Why?

a) ____________________

b) ____________________

c) ____________________

d) ____________________

e) ____________________

6. A policeman finds *B* dead on the street and *A* near the scene with a gun in hand. *A* later admitted that he shot *B*, yet *A* escaped an indictment for murder. Why?

a) ____________________

b) ____________________

c) ____________________

d) ____________________

e) ____________________

7. A man performed a certain act which, while legal and not immoral or injurious, was both unnecessary and unprofitable to him or to any other person. Why?

a) ____________________

b) ____________________

c) ____________________

d) ____________________

e) ____________________

Assigning Reasons Test (page 3)

8. A game hunter spared the life of an elephant he encountered. Why?

a) ____

b) ____

c) ____

d) ____

e) ____

9. *X* loved *Y* more than *Z* but married *Z*. Why?

a) ____

b) ____

c) ____

d) ____

e) ____

10. An old man had three children, *A*, *B*, and *C*. *A* and *B* were generally considered to be more worthy than *C*. Yet, when the old man died, he left all his estate to *C*. Why?

a) ____

b) ____

c) ____

d) ____

d) ____

DMI-4

Letting Your Mind Run Wild

There are times when thinking crazy on purpose is a good idea. Not acting crazy, thinking crazy. You can let your mind run wild in different ways. Try these running wild exercises.

Make a list. The topic is: What this world needs is . . . .

See how many possibilities you can think of.

Lots of things might have been invented just that way. Who ever thought there could be an oven that could boil water in a cup without the cup getting hot, that could bake a potato in four minutes? Who ever thought there could be a machine small enough to fit in your hand that could do all your arithmetic for you? Someone did. The ideas may have seemed crazy at one time. But they came true. How many things in science fiction stories have come true?

If you like to draw, try these. Draw a solution for each of these problems.

A machine that would automatically make your bed in the morning.
A machine that would help you go to sleep.
A peach picking machine.
A machine that would turn the pages of a book when you're reading in bed and your hands are cold.

ELABORATE ON THIS...

1. The children work in groups of 4-6 people.
2. One child is chosen to be the recorder.
3. Another child reads the first line of the story aloud. (See next page for story lines.)
4. Then each child adds a line to the story as the recorder writes it down.
5. After a group is finished (times will vary), the recorder reads the story aloud to be sure it makes sense and follows in sequence.
6. The group then plans how to present the story to the other children. Some possibilities are:

   -Read the story aloud (various children read different parts).
   -Have a narrator and others pantomime.
   -Dramatize the story.
   -Any other ways the children decide to present it.

STORY LINES

"It's not so bad being a giraffe," said Hermann to Abigail as they loped across the plains of Africa.

As he looked into the kitchen window of the house next door, Rob thought, "Boy, nobody will ever believe this!"

Randy Rightguard decided he must see a doctor. Not that anything major was wrong with him. It was just that his sense of smell and taste were beginning to act strangely.

Judy didn't know what to do. She had just gotten out of bed, looked in the mirror, and discovered she couldn't see herself.

After searching for fifteen years and a great deal of hardship, Dr. Art I. Fact was ready for his reward. The door to the tomb had been cleared of debris and he stood ready to open it.

The night was dark and gloomy as Ezra Dimlitt walked the mile and one-half from his bus stop to his home.

Today was a great day for Emma Golightly. At last she had a chance to stay home and get her house cleaned. When the doorbell rang she happily went to the door and opened it widely. Her smile froze on her face when she saw who was there.

As Sam R. Salt, the great trapeze artist, swung across the main ring of the circus, he looked over at his landing platform and gasped.

Fishing was Phillet's only pleasure in life. He'd taken his gear up to his favorite lake and was now enjoying the excitement of trying to land a big one. Suddenly, Phillet heard a strange noise in the water next to his boat. As he turned around he saw the strangest thing happening in the lake.

Hi Tyme loved the adventure of being an explorer, but this was becoming one of the worst moments of his life.

CONSEQUENCES
(Originality, Elaboration)

Sometimes it is fun to let your mind wander and imagine all the things that would happen if an unusual situation were to occur. For each of the following situations, list as many possible consequences as you can think of.

What would happen if there were no such thing as darkness or night? Two examples are given.

Cars would not need headlights.

People who stayed up late would not be called "night owls."

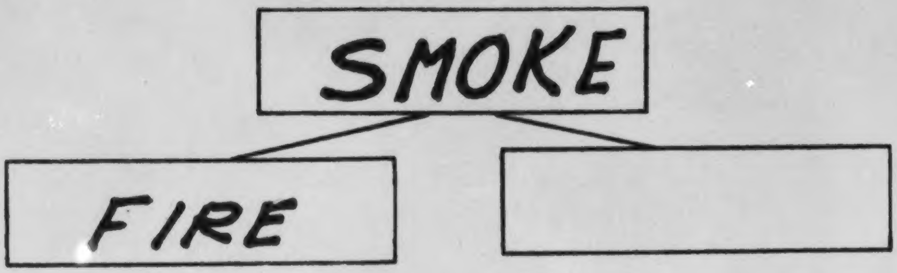
What would happen if automobiles were completely banned tomorrow because of pollution?

DMI-7

DANCE OF THE BOXES

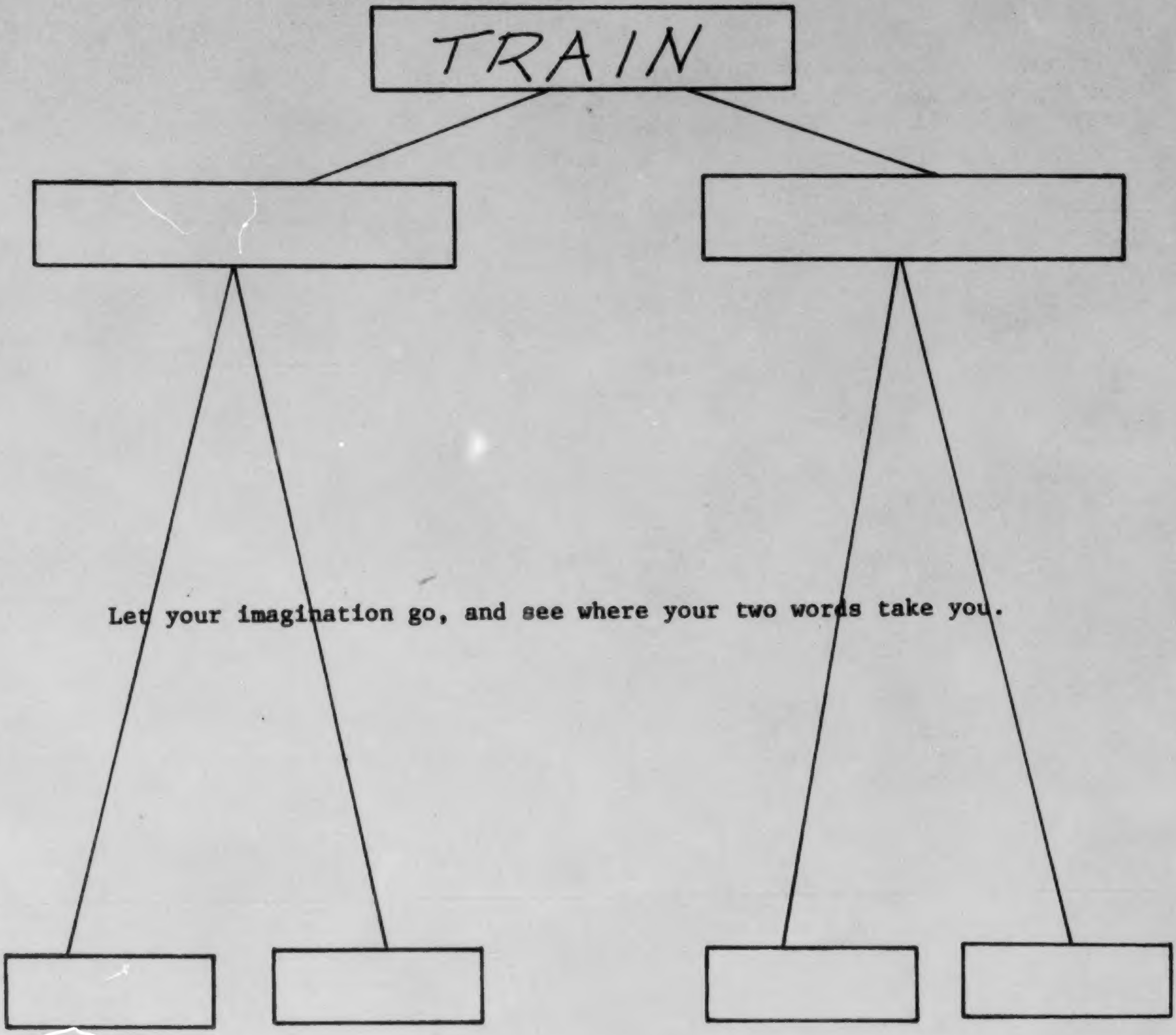
In this lesson let your mind wander from word to word.
The first word will be given to you.
Write in the word or words it makes you think of.

For example, when you see the word SMOKE
you might think of FIRE.
What other word does SMOKE make you think of?
Choose a word that doesn't mean the same thing as FIRE.
Write it in the blank box.



From *Making It Strange* (New York: Harper and Row Publishers, 1968).

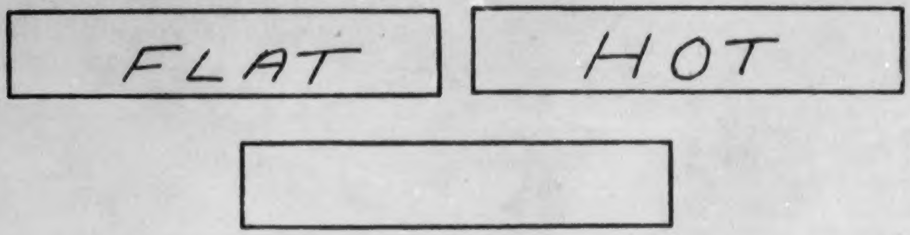
Now try one on your own.
What two words come to mind when you think of the word TRAIN?



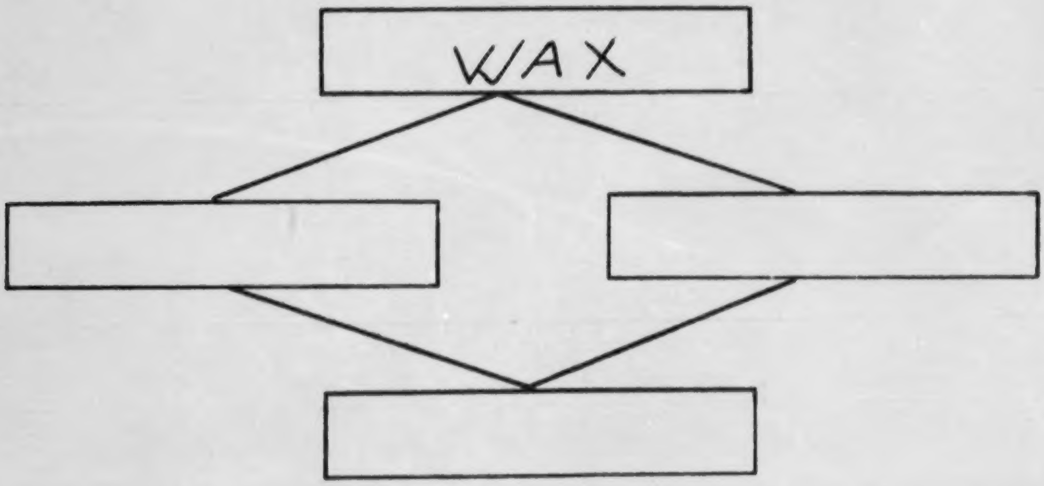
Let your imagination go, and see where your two words take you.

From *Making It Strange* (New York: Harper and Row Publishers, 1968).

It is fun to see what word comes to mind after you have looked at two other words. For example, what do you think of when you see the words FLAT and HOT? Write your answer in the blank box.

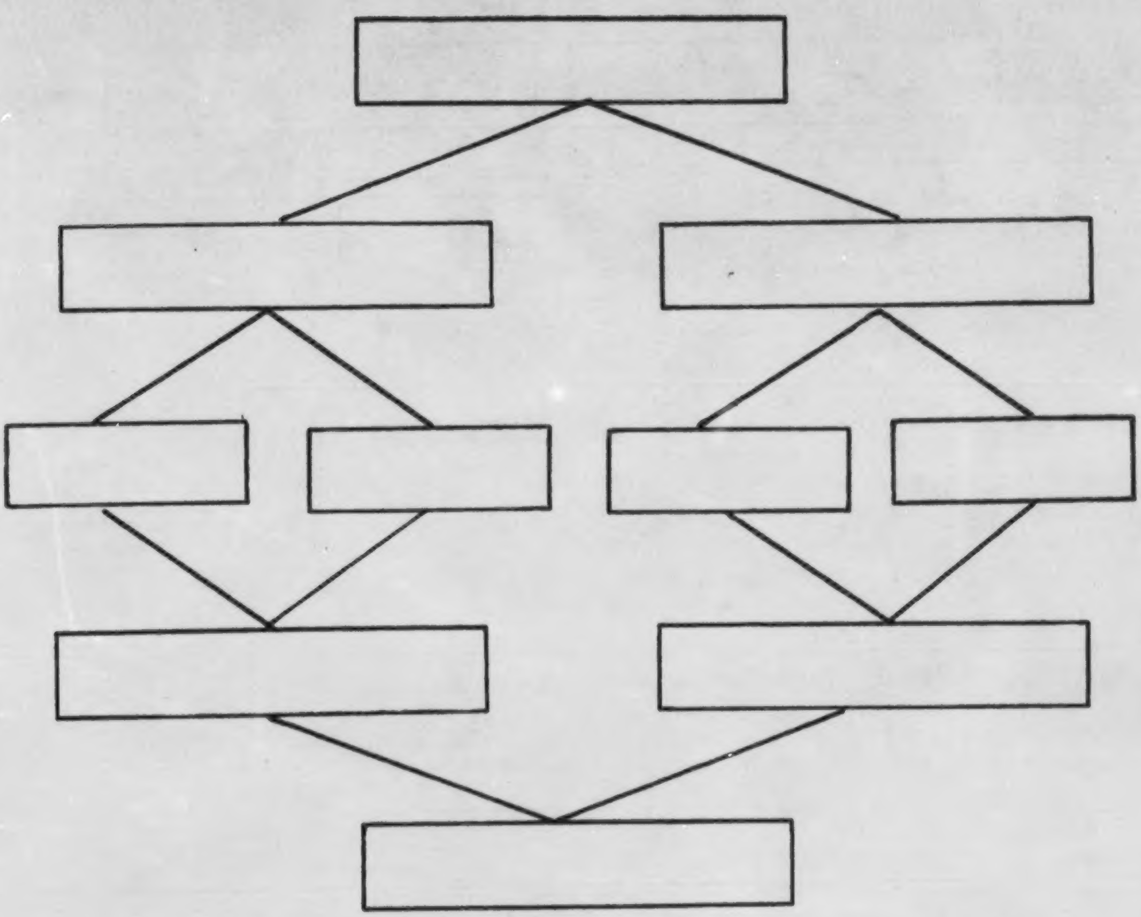


Use the word WAX to start this Dance of the Boxes.



From *Making It Strange* (New York: Harper and Row Publishers, 1968).

**Try a Super Box Dance!
Just follow the lines
and write your words in the blank boxes.**



How is your last word like your first word? ______________________________

____

____

How is it different? ____

____

____

From *Making It Strange* (New York: Harper and Row Publishers, 1968).

ANSWERS

DMT-2 TRIXIES

1. To overthrow the U.N. would incur a dark period in history.
2. Don't underestimate whose parent this is (parenthesis).
3. The commodore overate and the captain overslept.
4. To be overconfident between exams does not insure success.
5. An address: John Underhill
   Andover, Massachusetts
6. A fine investment begins when you are asked to risk (asterisk) nothing.
7. I understand you intend to overthrow my undertaking.
8. She is beside herself with indignation.

DIVERGENT PRODUCTION TASK CARDS

Task cards created for use with the divergent production factor are presented on the following pages.

The task cards have also been printed on a heavier stock and sets (Stock No. 41-S-9941) may be ordered through the Office of Materials Development (telephone 293-8140).

GHOST SQUARES

Playing Board:

Make a 6" x 6" matrix of 36 squares ruled out on a piece of cardboard, laminated or covered with contact.

Rules:

The first player writes any letter in any square. The second player writes a letter in an adjoining square. If he/she can make a two-letter word, he/she scores two points, and draws a line through the word. If not, Player 1 tries to complete the word, earning three points (because it is a three-letter word), and so on.

The person finishing the word starts a new word. At the end of the playing time, the person with the highest score wins.

SILLY SIMILES

Playing Board:

Provide an 8-inch square piece of cardboard on which has been drawn a 4" x 4" matrix or 16 two-inch squares. Inside each square write the start of similes such as: Big as, Brown as, Little as, etc. A spinner is sectioned off into triangles with the numbers 1 through 8.

Materials Needed:

-Paper
-Pencil
-Board of phrases
-Spinner

Object:

To see how many similes and creative similes you can make using the phrases from the board.

Rules:

The game may be played as an individual activity or as a competitive game with other players at other boards. Two players may play at one board at a time.

To start the game each player chooses a different phrase from the board. Each one spins the dial. The number on which the spinner lands is the number of similes he or she must make from that one phrase. Players write similes such as "busy as a bee," "sly as a fox," and so on. As soon as the player is finished writing the similes, he/she chooses another phrase, spins the dial, and writes down the number of similes the spinner indicated. No player has to wait for another player in order to spin the dial. Proceed in this way, writing similes for *three minutes*. Everyone in the group then counts up the similes written. The one with the most similes wins the game. No player can choose the same phrase twice, nor may he/she write the same simile more than once.

To make the game more challenging, add some action or description after the comparison, for example: "Busy as" could be written "busy as a ball at a ping pong match" or "busy as a mouse in a cheese factory." The game is played in exactly the same way as before except when counting up the scores no points are given for one that is merely a straight comparison with no action or description added.

Time could be increased to five minutes at the beginning of the second part of this game if desired.

D
Task Card 3

FLUENCY WHEELS...

Object:

To write as many words as possible in three minutes to match the sentence as the wheel is turned.

Number of Players: 6

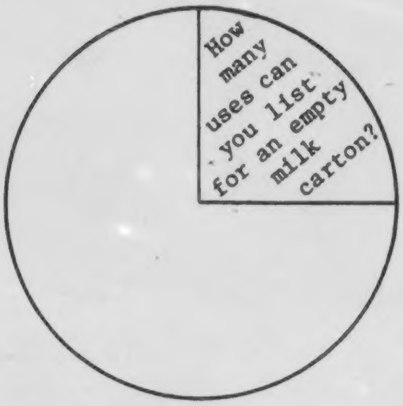
Materials Needed: 6 fluency wheels

How to Make:

Two large circles are cut out of tagboard for each wheel sectioned off into four sections. A sentence is written in each section such as: List everything that is white and round; How many ways can a bee sound? On the section of the wheel cut away one-fourth of the circle in pie-shape fashion. Put this circle on top of the typed circle and fasten together in the middle with a brad so that the cut away circle on top is easily moved.

Rules:

Each player is given a wheel, a piece of paper, and a pencil. At the word "Go," players turn the wheel to one of the four sentences. They write down as many words as possible that go with the sentence within three minutes. At the end of three minutes, time is called. The players turn to another sentence and start in writing words again for three minutes. The same procedure takes place again for the last two sentences. The player with the most words wins.



How many uses can you list for an empty milk carton?

GAME PICTURES

Object:

To draw a meaningful picture and a title for each doodle within a one-minute time period.

Number of Players: Any number, 1-2 to each board

How to Make:

This is a board of 26 different squiggles within circles; the circles are placed on the paper in two ovals.

Rules:

One to two players to a board. Each player is given a 9" x 12" piece of paper. Instructions are given to fold the paper into eight squares.

Each player chooses a picture from the board. When the signal is given to start, each player draws a meaningful picture from the squiggle within one minute. Time is called. Players choose another picture and again, at the call of "Begin," draw another picture in another square within one minute. The same procedure is followed for the remaining six squares.

To add to the game a three-minute period could be given to give a meaningful title to each picture.

There is no winner in the game, but sharing of each response to each doodle makes the game a fun one.

ATTRIBUTES

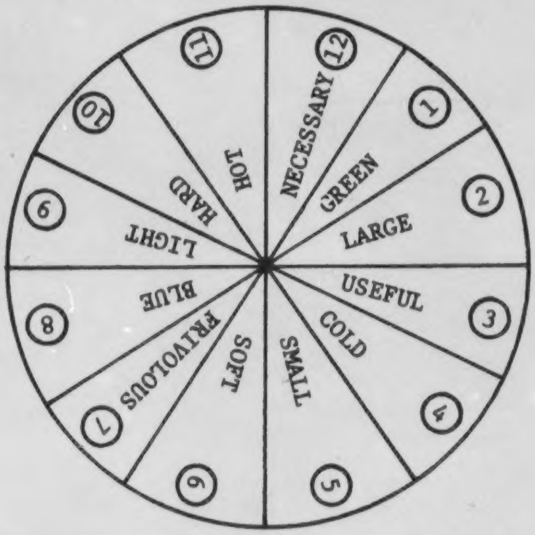
Object:

To think of as many words as possible from the pairing of two words.

Number of Players: 2 or more

How to Make:

Draw a circle approximately 5-1/2" in diameter on a piece of cardboard. Think of 12 descriptive words or adjectives to place around the circle.


12
NECESSARY
1
GREEN
2
LARGE
3
USEFUL
4
COLD
5
SMALL
6
SOFT
7
FRIVOLOUS
8
BLUE
9
LIGHT
10
HARD
11
HOT

Rules:

One player throws one die to find the first attribute, the second player throws 2 dice to find the second attribute. Put the two attributes together and think of as many words as possible that have both attributes. For instance, you throw a 7 then an 11 "large and useful." How about a refrigerator, stove, air conditioner, train, and airplane? A time limit of five to 10 minutes for writing of the words may be set by the players.

SUBSTITUTION

Most card games are designed for a specific age group--simple games of guess and chance for young players, games of skill and strategy for older kids and adults. Here's a rare find. A solitaire game that's fun and easy for a six-year-old, yet intellectually stimulating (and sometimes quite difficult) even for "Einsteins." More good news. It takes only a few minutes to make, and about the same time to learn the rules.

Materials Needed:

Paper
Pencil (or crayon)

Tools: Scissors

Construction:

Cut about 20 small squares of paper. The exact size and quantity are unimportant. You might try cutting an index card in two. On half the cards draw a circle symbol, and on the remaining cards draw a square symbol. For easy recognition, especially if kids are playing, it's a good idea to give each symbol its own color, making for example, all circles blue and all squares red. These are the game cards. Now make the rule cards. Cut about ten larger strips of paper or use uncut index cards. On each of the strips write a circle and a square equation. Here are some examples chosen from the total number of possible permutations. Use these, or any of the other possibilities:

1(■○=■) 2(○○=■) 3(■■=○) 4(○■=○)
5(■■○=■) 6(■○■=■) 7(○○○=■)
8(■○○=○) 9(○■■=○) 10(○○■=○)
11(■■■=○■) 12(○■○=■■)

How to Play:

1. Shuffle the game cards.
2. Lay out all the game cards in a row, face up, in their shuffled order. We've chosen to use fourteen cards:

■○○■○■■■○■○○■○

3. Shuffle the rule cards, pick the top two, and place them below the row of game cards, face up:

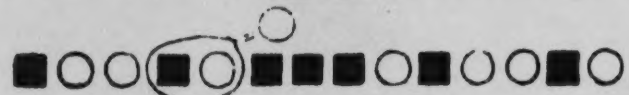
Game cards: ■○○■○■■■○■○○■○

Rule cards: ■○=○ ○■○=■

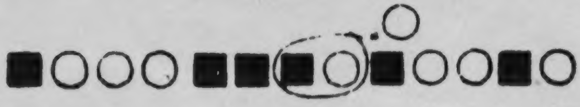
4. The object of the game is to use the substitution equations of the two rule cards to reduce the row of game cards to as few as possible. A single card remaining is the best you can do.

Here's an example of playing the game, using the card set-up which appears above.

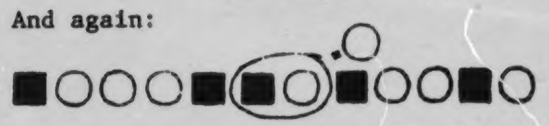
1st play: Acting upon the substitution equation of the left-hand rule card, the player removes ■● cards and substitutes a ● card:



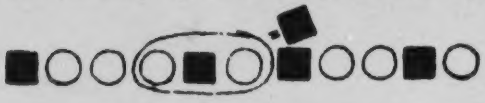
2nd play: Using the left-hand substitution rule again:



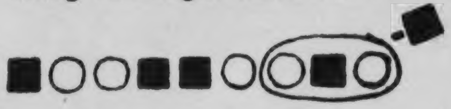
3rd play: And again:



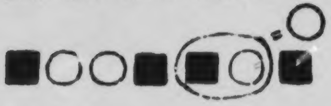
4th play: Now acting upon the right-hand substitution rule card:



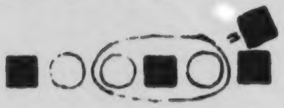
5th play: Using the right-hand substitution rule again:



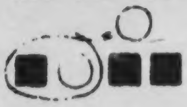
6th play: Now the left-hand:



7th play: Now the right:



8th play: Now the left again:



End of the game--no more substitutions can be made. Too bad, we're left with three cards:

○■■

D
Task Card 6
(Cont.)

Obviously, any specific combination of game and rule cards can have many different solutions, and the length of the starting line to some degree determines difficulty. A sophisticated player will plan strategies many moves ahead. If you want even more of a challenge, here are a few game variations:

Same game, but this time you're allowed to use the rule cards also in reverse, that is, you can use the equations to lengthen as well as shorten the row. The object is still to end up with the shortest row.

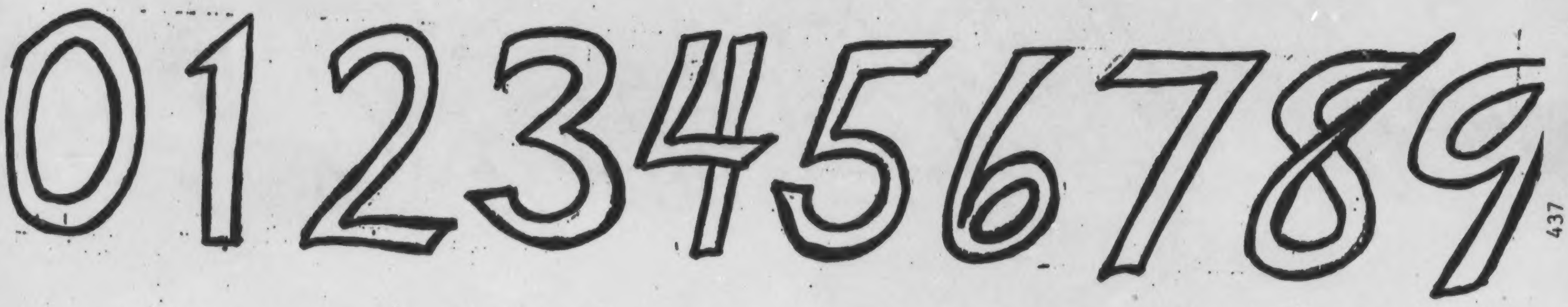
Start with a single game card and two rule cards. Try to lengthen the row to use all the game cards.

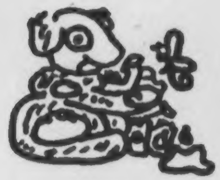
As a competitive game, have two or more players each with identical starting rows and rule cards. See who does best.

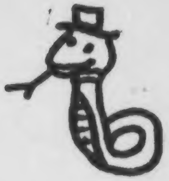
D
Task Card 7

NUMBER ANIMALS

Make a number shape. Use the shape to make an animal. Turn the shapes on their sides or upside down. Use one shape or many shapes.





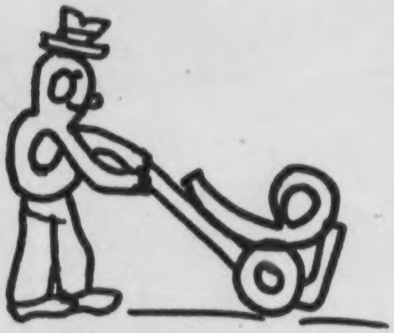


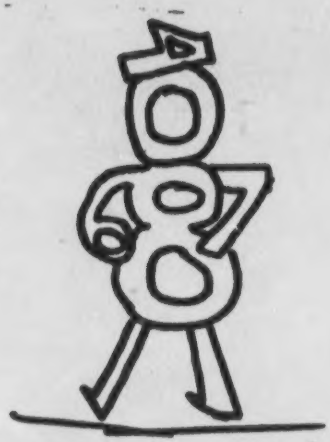
NUMBER PEOPLE

Make a number shape. Then make a person.

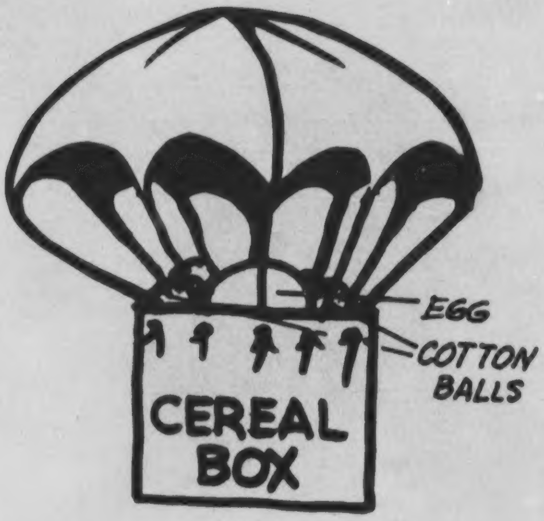
You may use more than one.

0123456789





THE AMAZING FOOL-PROOF EGG DROP DEVICE



A CONTEST !!!!!

Design a package to hold a raw egg so that when the egg is dropped from the roof of the school,* it WILL NOT BREAK!!!

Be creative.

Use any materials you can find.

Have a prize for the winner.

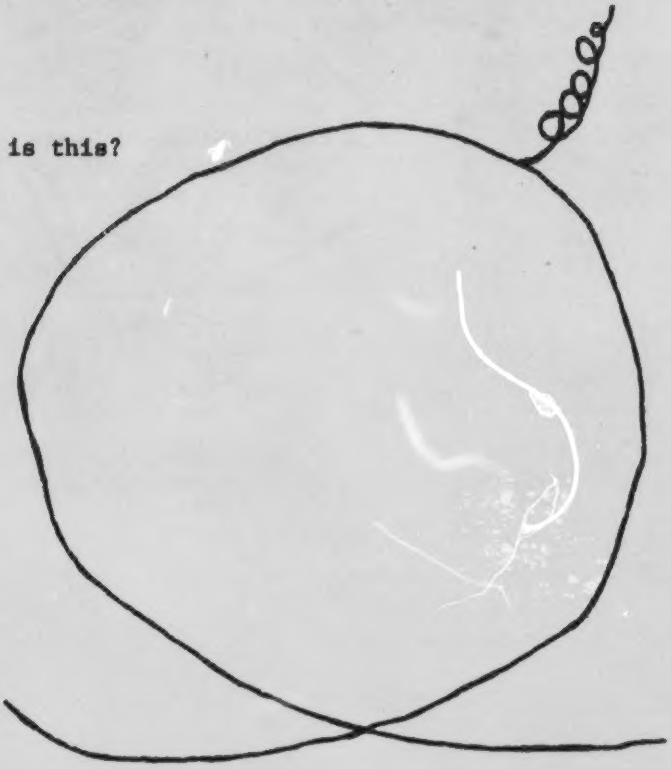
---

*The package may also be tested by dropping it from the top of a ladder or from a second-story window.

D
Task Card 10

WHAT IS THIS?

What is this?



What is this? Where do you find it? Can it talk or sing? Color it. Put more lines on it and tell all about it.

Did you make up a story about this drawing? Do the new things you added help you make better descriptions in your story? Or give you new ideas for the whole story? Adding new ideas onto old ideas is called elaboration (ee-lab-o-RAY-shun).

EXAGGERATIONS

Read the sentences and underline any parts that you think are exaggerations. Example: Paul Bunyan, the immense lumberjack, combed his hair with a cross-cut saw; he also brushed his beard with a small pine tree.

1. During the winter of the blue snow, Babe's mother was so distressed she ran away and left poor Babe in the snow.
2. Paul Bunyan took the forlorn little beast home although he thought a blue ox was a strange looking creature.
3. The lumberjack was so immense that he could not be measured in feet and inches.
4. The bunks for the men were in buildings as high as mountains.
5. Many of the lumberjacks used parachutes to get down from the upper bunks.

Use your own ideas for completing the story below: Exaggerate as much as you wish.

> The men in Paul Bunyan's camp and all those at his macaroni farm often played jokes or tricks on each other. Usually they were careful not to play the kind of jokes or tricks that would make anyone feel distressed. But one joke that was played frightened one of the younger lumberjacks.
>
> For several days after the young man arrived at the camp, he heard the other men talk about a ferocious beast that often came to the camp.
>
> "It creeps in at night," said one man. "If it even touches a man, he cannot get away from it."
>
> One night, when the young lumberjack got into his bunk, something clawed at him. He felt sure it was the queer beast of which he had heard. He leaped out of the bunk, but the beast seemed to leap with him. The young man yelled for help.
>
> When the other lumberjacks laughed, the young man knew it was not the terrible beast that was clinging to him.

WHAT DO YOU THINK IT WAS?

Write an ending for this story.

Write some of your own exaggerations!

D
Task Card 12

HELP WANTED HELP WANTED HELP WANTED HELP WANTED HELP WANTED HELP WANTED

TEACHER WANTED -- VACANCY

Write an advertisement for a teacher you want to hire.

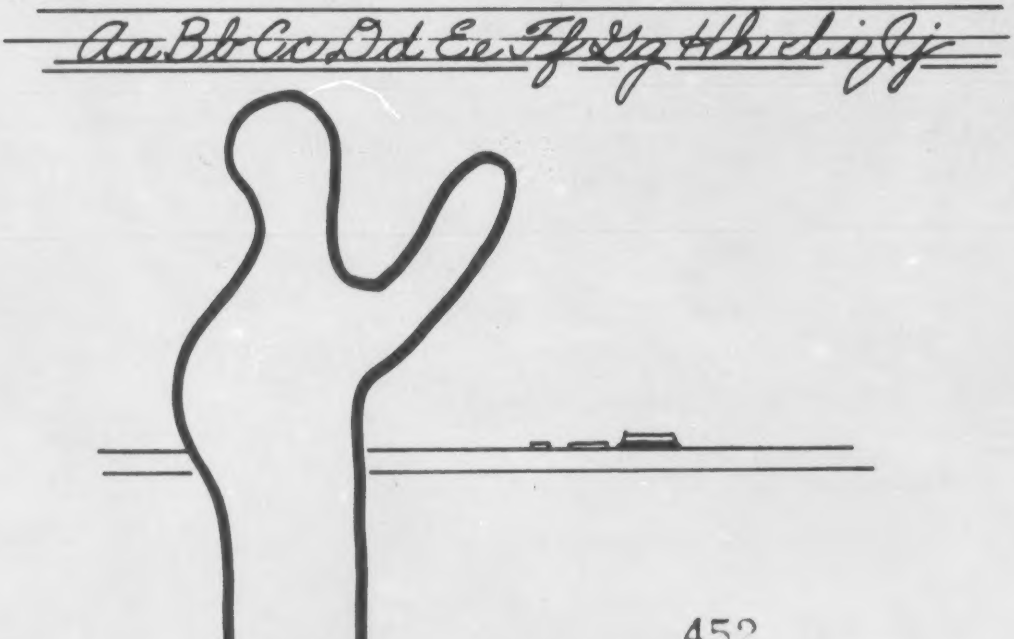
List all the necessary qualifications.

What kind of person are you looking for?

What do you want him/her to do? Or to be?

What are your expectations?

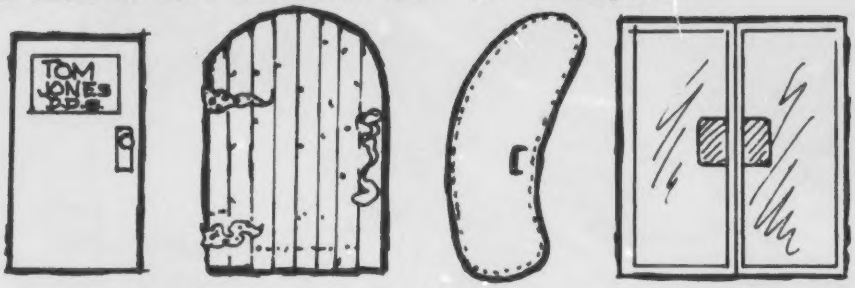
Compare ads with those of your classmates. How do your ideas differ from others in the class?


Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj

D
Task Card 13

WHICH DOOR WOULD YOU OPEN?

Illustrate three or more different doors (as in sample).


TOM JONES D.D.S.

Brainstorm a list of all the different doors a person might enter in one day...

-A dentist's door

-A castle door

-A spaceship door

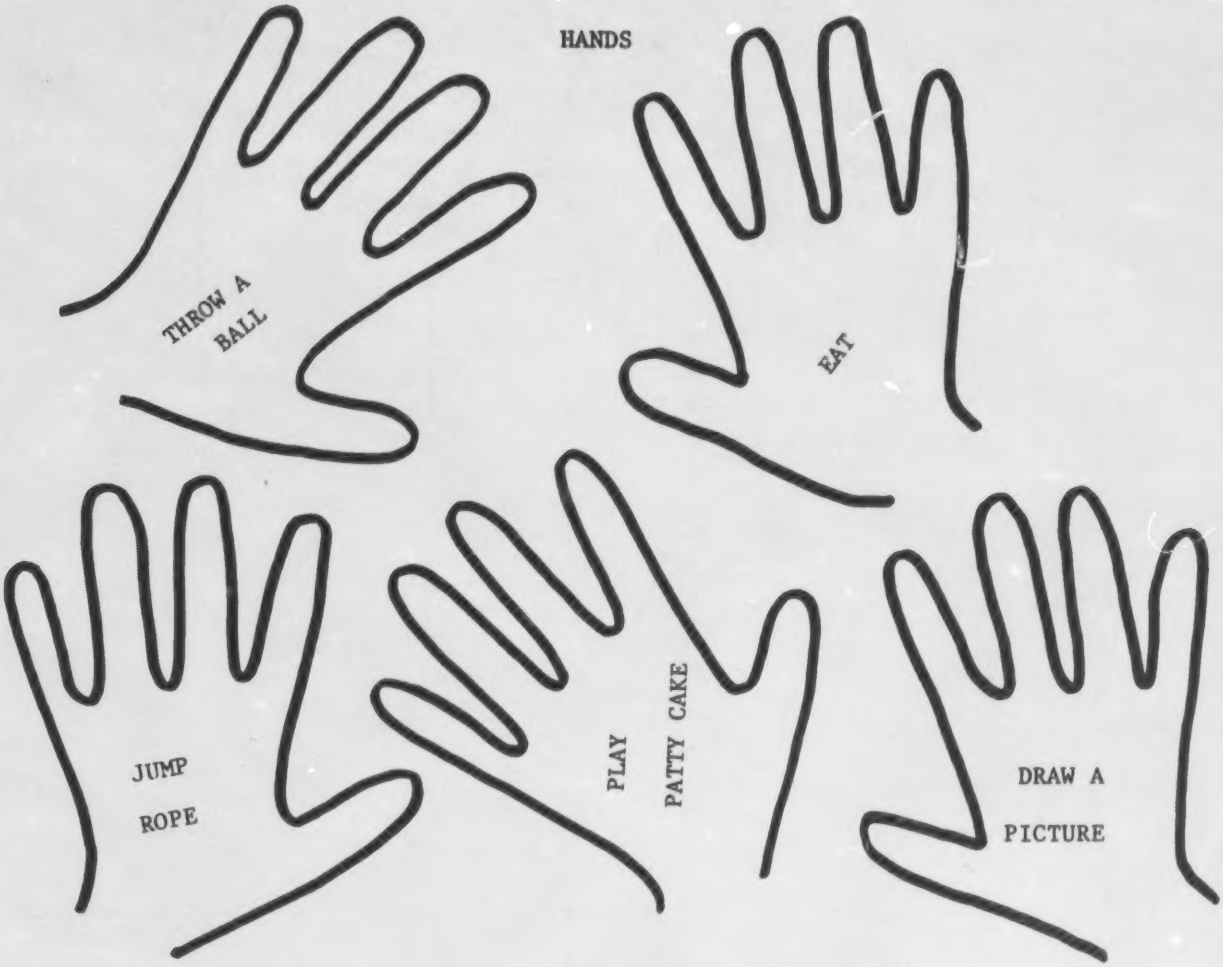
-A department store door

Create your own door out of construction paper.

Write about an adventure that happened to you when you entered your door.

D
Task Card 14

HANDS


THROW A BALL
EAT
JUMP ROPE
PLAY PATTY CAKE
DRAW A PICTURE

Brainstorm all the fun things you can do with your hands.

Trace your hands on paper.

Cut out the tracings and write your ideas on them or illustrate your ideas on them.

Make a FLUENCY bulletin board!

D
Task Card 15

?? WHAT IF. . . ??

-You had an eye on the end of your finger...

-A neck as long as a giraffe's...

-A nose on top of your head...

-Wings

-HU-U-U-U-U-U-U-U-GE feet...

Draw yourself with one of these new attributes. Write a story about your life.

INVENT A CLASSROOM PLANET

Draw a classroom planet.

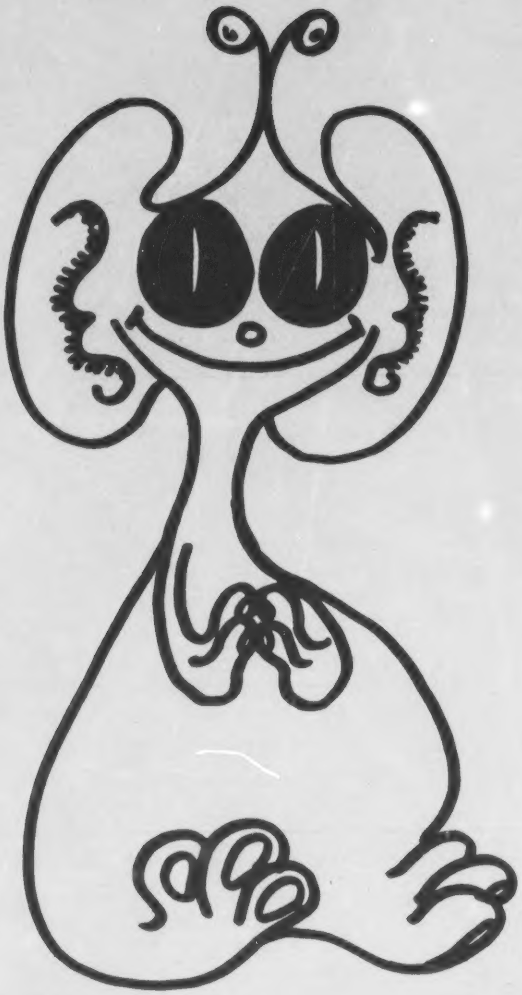
Give it a name, a money system, a culture, a government, and a code.

Who lives on this planet?

Write about your visit to it.

D
Task Card 17

LOOK! IT'S A SCHNEEP!



Create your very own imaginary creature!!

Pretend it only visits Earth every 200 years and just today landed in your classroom. Or in your room at home.

Give it a name and physical characteristics.

Make drawings.

Build a creature domicile.

Make a zoo of everyone's creatures.

Classify them according to their attributes.

D
Task Card 18

CREATIVE IDEAS ABOUT ANIMALS*

1. If you could have one pet, what pet would you choose? Why? How would you like to be treated if you were that pet?
2. You are an animal. Write a story from the point of view of an animal in a zoo; in the jungle; or in a forest.
3. Write a diary of the life (or a few days) of an animal.
4. Write a cinquain about an animal.
5. If you could be an animal, what traits would you like? (Run like deer, fly like hawk, eyes like eagle, think like man.)
6. Discuss ways that animals are alike and different. Consider wild animals and domestic animals. Discuss needs of pets.
7. Some people say we have too many pets. What would happen if we had no pets?
8. You wake up one morning and find you are a rabbit. How could this change you, and what are some of the things that might happen? How will your condition affect others?
9. You brought a lost animal home with you. What are some things that might happen?
10. Illustrate an animal nursery rhyme.
11. Draw cartoon (or just the blurb) showing animals in conversation.
12. Invent animals. Use parts of animals and make an imaginary animal. Decide what the animal would eat, where it would live, how it would communicate.
13. Show animal pictures. Have children describe the animals. Make up things the animals might be saying. Have the animal tell his story.
14. Someone offers you a Saint Bernard puppy. What objections would your parents have? What would you say to make them change their minds?

---

* From *Igniting Creative Potential*, Utah School Handbook, Calvin Taylor Workshop.

D
Task Card 19

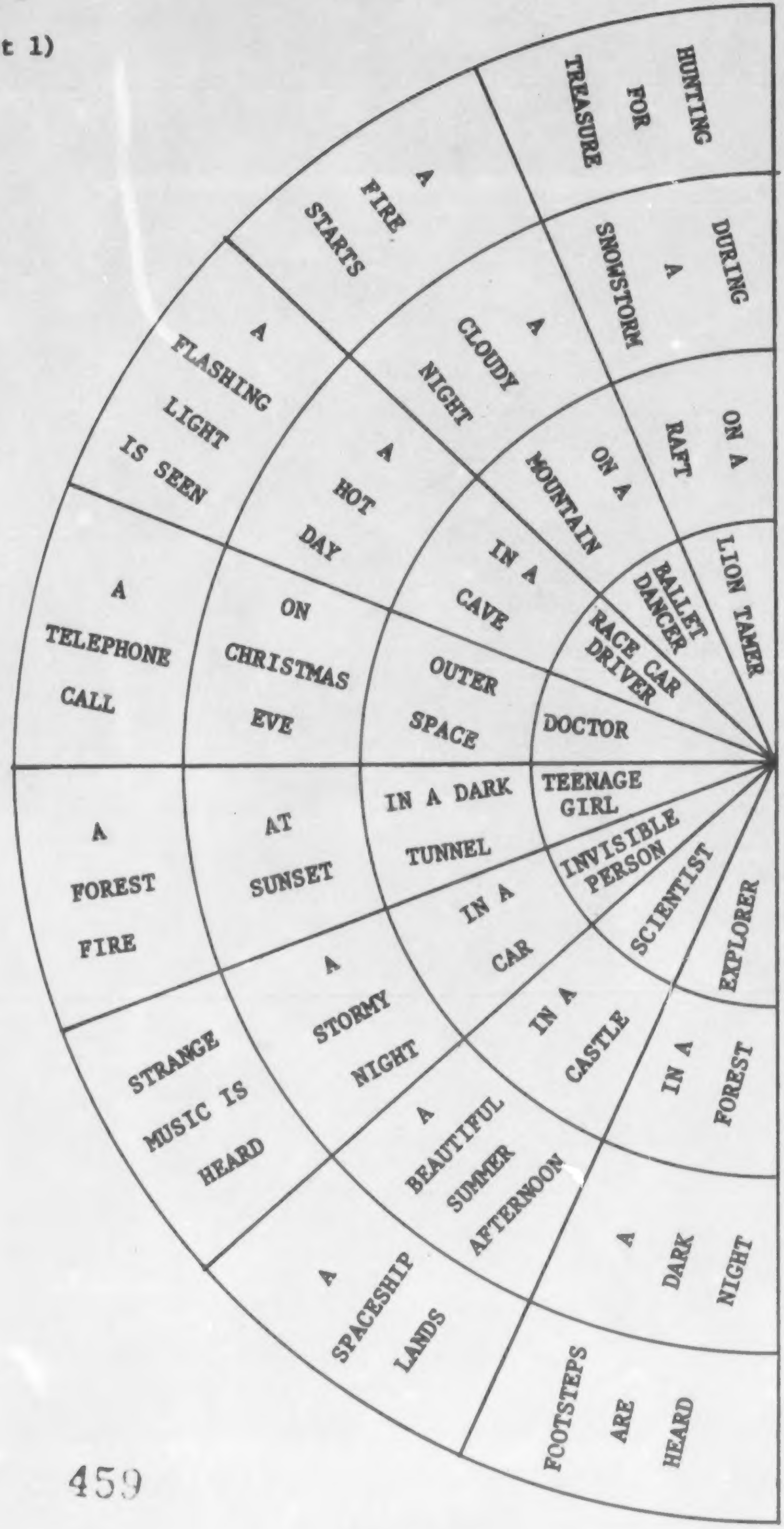
FLEXIBILITY
WHEEL (Part 1)

WHO.....

WHERE.....

WHEN.....

WHAT.....


LION TAMER
BALLET DANCER
RACE CAR DRIVER
DOCTOR
TEENAGE GIRL
INVISIBLE PERSON
SCIENTIST
EXPLORER
ON A RAFT
ON A MOUNTAIN
IN A CAVE
OUTER SPACE
IN A DARK TUNNEL
IN A CAR
IN A CASTLE
IN A FOREST
DURING A SNOWSTORM
A CLOUDY NIGHT
A HOT DAY
ON CHRISTMAS EVE
AT SUNSET
A STORMY NIGHT
A BEAUTIFUL SUMMER AFTERNOON
A DARK NIGHT
HUNTING FOR TREASURE
A FIRE STARTS
A FLASHING LIGHT IS SEEN
A TELEPHONE CALL
A FOREST FIRE
STRANGE MUSIC IS HEARD
A SPACESHIP LANDS
FOOTSTEPS ARE HEARD

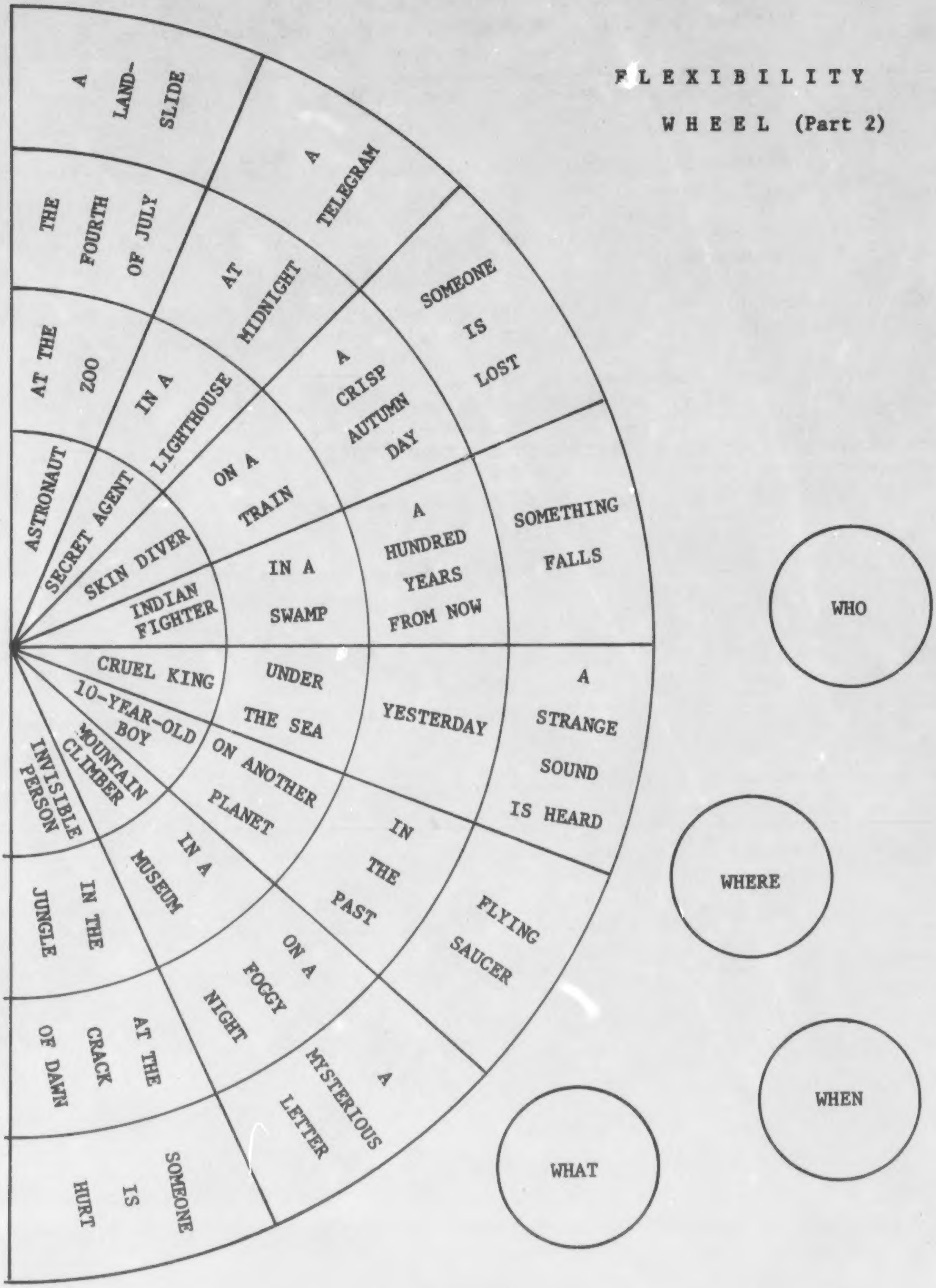
Create an ongoing writing center with the exciting element of chance.

Make four large tagboard (or chipboard) circles.

Each circle is sectioned and gives one story idea.

Students spin the wheels and where they stop determines the story elements.

FLEXIBILITY WHEEL (Part 2)


A LANDSLIDE
A TELEGRAM
SOMEONE IS LOST
SOMETHING FALLS
A STRANGE SOUND IS HEARD
FLYING SAUCER
A MYSTERIOUS LETTER
SOMEONE IS HURT
THE FOURTH OF JULY
AT MIDNIGHT
A CRISP AUTUMN DAY
A HUNDRED YEARS FROM NOW
YESTERDAY
IN THE PAST
ON A FOGGY NIGHT
AT THE CRACK OF DAWN
AT THE ZOO
IN A LIGHTHOUSE
ON A TRAIN
IN A SWAMP
UNDER THE SEA
ON ANOTHER PLANET
IN A MUSEUM
IN THE JUNGLE
ASTRONAUT
SECRET AGENT
SKIN DIVER
INDIAN FIGHTER
CRUEL KING
10-YEAR-OLD BOY
MOUNTAIN CLIMBER
INVISIBLE PERSON
WHO
WHERE
WHEN
WHAT

D
Task Card 20

HOW CAN YOU EXERCISE YOUR IDEA-FINDING POWERS?
(Selected from a list by Sidney J. Parnes and Alex Osborn)

1. Name at least six improvements which could be made on the common paint brush.

2. Name five inventions which the world could use to advantage, but which have not yet been invented.

3. What improvements in a bus would you suggest for the comfort and convenience of passengers?

4. If you had the job of drastically redesigning the 50¢-piece, what would you suggest for the head and for the tail? Give your reasons.

5. What new ideas could be added to the game of baseball to make it more interesting and fun to play?

6. Write a twenty-word telegram to a friend telling about one day in a school.

7. Write a classified ad offering for sale a pocket-sized exercise kit, a bed-making machine, or a device to make toothpicks.

8. Name several things you could make by combining the items in each group:

    a. A volley ball and a steel spring
    b. 13 empty pop bottles and 72 ounces of water
    c. A board (1/2-inch thick and 3 feet square), a stick, and a hinge.

9. Describe an idea for a TV show which you think a lot of people would watch, but which has never been done before.

10. What would be the results if all people woke up one morning and found themselves twice as large?

11. If your neighbor's dog used your garden as a shortcut, how would you go about stopping this?

12. In what ways would you improve children's phonograph records?

13. Think of 10 uses for scotch tape that you have never heard of.

14. What parts of a home might be improved if they were curved instead of straight?

15. What ideas could you suggest to help a mother persuade her child to clean up his/her room?

16. Think of at least three ways to wake people up in the morning, gently but firmly.

17. Everyone has something that "bugs" him/her. Write down three of yours. Then make some creative suggestions as to what to do about them.

18. In what ways would our lives be affected if the wheel had never been invented?

19. Think of some better ways of collecting garbage in order to avoid the noise of the present system and unsightly cans or bags at the curb.

20. Make up a story which will include all the items in "a" or "b":

    a. A gray cat, a box of marshmallows, yesterday's newspaper, a pair of pajamas, a policeman
    b. A campfire, two gravediggers, a bowl of rice, a blueberry bush, and a clown.

21. Name a subject you have studied which seems useless to you. Now, make a list of possible uses for this subject. Try for ten ideas. Now try for 15 or 20. Now, what do you think of the subject?

22. Select a new title for each of 10 chapters in any of your textbooks. Make the title exciting enough to be a movie, but yet appropriate to the contents of the chapter.

23. Originate 10 new weird food concoctions.

24. Suppose you were developing an illustrated alphabet book for children who are very fond of automobiles and anything closely associated with them. Pick an "automobile" word for each letter of the alphabet. (You may use any subject of your choice.)

25. What 10 ways can you think of to encourage people to use less fuel and power in their everyday living?

EVALUATION

INTRODUCTION

Code - E   Color - Green

Evaluation is an area teachers tend to neglect in the classroom and the one area in which gifted students most often need remediation when diagnosed. Students should be provided an opportunity to make decisions and exercise judgments.

Students should have some time during the day when they decide how they will use their time. Younger children should be offered activities they may choose from, and the choice should be their decision. Sometimes students use poor judgment and evaluation in awareness of themselves and others. Many strategies can be used in the classroom to help with these situations. Sidney Simons' book *Values Clarification* and the self-awareness units developed by Project CHOICE for San Diego City Schools have many ideas which work well in the area of evaluation.

The activities presented in this guide have been developed for use in the evaluation factor. The guide is designed as a supplement for the materials developed by Dr. Meeker found in the SOI Abilities Workbook on Evaluation. The activities have not been written for any particular grade level. If the activity is not appropriate, the idea or technique can easily be adapted. Many of the activities can be adapted and changed to fit into other operations. For example, activities used in ESC could be used in NSC since evaluation and decision-making are used when sorting information to find the "right answer" in convergent production.

This section of the guide contains lists of materials which will be helpful in working with SOI and in developing materials to fit the SOI model. The blank grid can be used to plot the needs of students in a particular operation. (See Introduction section of the guide.) The names of students who need remediation in the area of ESU should be recorded in that cell. A grid should be prepared in this way for each factor.

Games and other commercially prepared activities are used effectively within the SOI framework. Not only are these activities stimulating and exciting to the student, but they also offer another dimension to the SOI program. A list of materials available for Evaluation is presented in this section.

Following the coded activities, task cards for evaluation are presented. The task cards have not been cell-coded since they do not lend themselves to any one particular cell but to several.

Teachers may wish to put together games requiring logic and strategy for use in a classroom lab. These types of games fit very well into SOI since they require judgment and decision-making.

GLOSSARY FOR SOI FACTOR DEFINITIONS FOR EVALUATION (WISC-R ANALYSIS)

EFU - Ability to identify identical forms
EFR - Ability to evaluate figural relationships
EFS - Ability to evaluate and decipher systems, beginnings, and ends
EFI - Sensitive to problems, spatial, seeing defects and deficiencies and suggesting improvements

ESR - Decides which symbol relations are consistent with others in a series

EMU - Ability to apply varied word meanings
EMR - Uses logical relationships in testing correctness of conclusion
EMS - Appraises aspects of common situations in terms of experience
EMT - Practical judgment about ideas

C[illegible]T 5

"E" EVALUATION ACTIVITIES GRID
(Bloom's Analysis, Synthesis)
(Judgment, Planning, and Foresight)

GUILFORD'S
OPERATION:

PRODUCTS		FIGURAL (F) Objects and Shapes	SYMBOLIC (S) Numbers and Signs	SEMANTIC (M) Words and Ideas
Units	U	EFU--figure similarity EFU--vocabulary EFU-V--picture evaluation EFU--picture differ. EFU--figure ground	ESU-V--letter discrim. ESU--letter patterns ESU--visual discrimination ESU--letter, count symbol	EMU--match picture and word EMU--descriptions
Classes	C	EFC--picture simil. and diff. EFC--picture classification EFC--class, color and sound EFC--taste, simil. and diff. EFC--form discrimination	ESC--phonics ESC--letter and number classification ESC-V--number classif.(ones, tens, hundr., odd, even)	EMC--class names EMC--concept classification EMC--word classification EMC--classification, animal or plant
Relations	R	EFR--sequence of figures EFR--form rel. alike/dif. EFR--sequence of figures EFR--form discrimination	ESR--equations ESR--word pairs ESR--nons, word pairs ESR--rank continuance	EMR-V--color rhymes EMR--reading comprehension EMR--related words EMR--verbal analysis
Systems	S	EFS--construction of picture sequences EFS--sequence, color and shades	ESS--series which do not belong ESS--letter sequence ESS--series, numbers	EMS--sentence construction EMS--picture absurd EMS--comprehension EMS--verbal absurb.
Transformations	T	EFT--figure rotation EFT--figure transformation EFT--plotting charts	EST--jumbled words EST--shapes and values	EMT--cartoon punch lines EMT--unusual uses EMT--word transformation EMT--pantomimes EMT--number transfer
Implications	I	EFI--figural sequence	ESI--abbreviations ESI--letter consistency ESI--map reasoning	EMI--logical deduction

From: Meeker, M. and Sexton, K. *SOI Abilities Workbooks*. Loyola University, Los Angeles 90045.

COMMERCIALLY PRODUCED MATERIALS

Many of the commercially prepared educational materials can be used to supplement the activities and materials developed for the SOI operations. The following list contains materials which have been coded for evaluation. This list was taken from a more extensive list compiled by the Austin State School in Austin, Texas for a PAR Project to classify educational materials for SOI. In some cases, it was found that the materials could be used for several different cells in the SOI model and were coded accordingly. Secondary uses are shown in parentheses.

Company	Materials	Code
Instructo	Discovering Opposites	EFC (NFC, CFC)
	Magnetic Seasons	EMS (CMS)
	Concept Builders (Food)	EFC (CFC, NFC)
	We Dress for the Weather	EFR, EMR, EMI (CMI)
Trend Enterprises	What's Missing?	EFR (CFU, CFR)
	1-5 Tactile Placements	EFR (CFR, CSR)
Developmental Learning	Same/Different Color	EFR
Milton Bradley	Space Relationship Cards	EFR, EMR (CMR, CFR)
	Sequence Cards	EFC, EMS (CFS, CMS)
	Phonetic Quizmo	ESU (CSU)
	Homonym Poster Cards	EMR (CMU, CMR)
	Synonym Poster Cards	EMR (CMU, CMR)
	Antonym	EMR (CMU, CMR)
	Pick Pairs Game	EFU, EFR (CFU, CFR)
	Tell Time Quizmo	EMS, ESS (CMS)
	Multiplication and Division Quizzes	ESR (NSS, CSP)
	Vegetables and Fruit	EFC (CFU, CFC)
Ideal	Sequence Cards	EMS, EFS (CFS, CMS)
	Community	EMS (CMR, CMS, NMS)
	Transportation and Communication Crossword Puzzle	EMS (CMF, CMS, NMS)
	Plastic Measuring Jars	EMS (CSS, CMS)
	Rhyming Puzzle	EMR (CMR, CMU, CFU)
	Thermometer	ESS (CSS)
Whitman	Help Yourself Picture Nouns	EMR (CMR)
Cook Publishing Co.	Social Development Teaching Pictures	EMI (CMR)
Sweet Education Supply	Flannel Board Visual Aids (Good)	EFU, EFC (CFU, CFC)
Western Publishing Co.	Bead Frame SRA	ESR, ESS (CFR, CSR, CSS)
Wollensak	Instructo Activity Kits	EFC (CFC, CFR, CFU)

Company	Materials	Code
Bowmar	Body Image Kit	EFR (CFR)
Teacher Made	Animals and Homes	EFR, EMR (CFR, CMR)
	People and Jobs	EFR, EMR (CFR, CMR)
	Colors and Shapes	EFR, EMR (CFR, CMR)
	Number Bingo 1-10	ESR (CSR)
	Number-Shape Bingo	EFR (CSS, CFC)
	Classification of Happy	EFC (CFC, CMC)
	Money in the Bank	ESR (CSS, CSR)
	Clocks (Different Time)	ESS (CSS)
	Card-Items with Price	ESC (CSU, CFU)
	Card (Food with Price)	ESR (CSU, CFU)
	Addition-Subtraction Game	ESS (NSR)
Educational Projects	Season Learning Manual	EMS, EFU, EMR (NMR, CMR)
Playschool	Match-Up Puzzles	EMR, EFR, (CFR, CMR)
	Nested Blocks	EFR
Garrard	Who Gets It?	EMR, EFR (CFR, CMR)
	What the Letter Says (Dolch)	EMR, ESR (CMR, CSU)
Edu-Cards	Zoo Lotto	EMR (CFU, CMR, CFR, CMU)
	What's Missing Lotto	EMU, EFU (CFU, CFR, CMU)
	ABC Lotto	ESR (CSR, CFR, CMR, CSU, CMU, CFU)
	Farm Lotto	EMU, EFU (CFC, CMC, CFU, CFR, CMU)
	Go Together Lotto	EFR, EFU (CFR)
	Object Lotto	EFU, EMU (CMR, CFR, CFC, CFU, CMU)
	Simple Object Bingo (Color Cued)	EFR (CFU, CFC, CFR)
	The World About Us Lotto	EMU, EFU, (CFU, CFR, CMU)
Milton Bradley	Human Body Parts	EFR, EMR (CFR, CMR)
Allied Educational	O'Hare Starlite Program	EFU, ESU (CSU)
Kenworthy Ed. Service	Phono Rummy, Set A & B	EMR (CMU, CMR)
Gellis-Widmer	Play Way "Look" (Dolch)	EMR (CMR, CMU)
Balcrum	Sum Stick	ESR, EFI (CSS, NSR, CST)

Company	Materials	Code
Preschool Elementary Education	Moods & Emotion Teaching Pictures	EMR (CMR)
	Add-A-Count Scale	ESR
	Nuts and Bolts	EFR (NFR)
	Position in Space Posters	EMR (CMR, NMR)
	Door Locks	EFI (CFR, NFR, CFI)
	Laminated Math Cards (Measurement Money, Etc.)	ESS (CSS)
	Functional Sign Cards	EMI (CMI, CMU)
	Measuring Cups	ESU (CSS, CSU)
	Kitchen Bingo	EFR (CFR)
	Foodland	EFC (CFC, CFR)

MATERIALS FOR THE SOI ABILITIES WORKBOOK

The items listed below are needed to complete activites found in the *SOI Abilities Workbook* developed by Dr. Mary Meeker for the evaluation factor. The list is included to assist teachers in working with Meeker's materials. The list can be used as a shopping list for teachers or for requesting materials from students' families.

As teachers acquire these materials they should be labeled and placed in a central area for easy access for students, aides, and helpers. Teachers may wish to consider keeping the materials for each operation separate, for example, all materials for evaluation could be placed together in one large box. The materials could easily be stored when not being used.

1. 1 roll paper towels
2. 1 box 1/2"-cubes, spheres, and cylinders (colored beads)
3. 2 skeins of knitting yarn (2 different colors)
4. Paper clips, 1/2 dozen, different sizes
5. 1 package pipe cleaners
6. 1 package compressed charcoal sticks
7. 2 dozen popsicle sticks
8. 1 box flat toothpicks
9. Scraps of cloth (good-sized, 12 different ones)
10. 1/2 dozen cardboard tubes from wrapping paper or towels
11. 1 roll of white rice paper or equivalent
12. 1 ball of string
13. 1 package of various buttons
14. Dried seed pods from San Diego trees
15. 2 small plastic film reels

EVALUATION ACTIVITIES

Activities for the evaluation factor are presented on the following pages. The letters (code) in the upper right-hand corner correspond to the Evaluation Activities Grid presented in the Introduction of the Evaluation section. The answers for activities are presented at the end of the section.

CROSS-OUTS

In the following boxes cross out the figure that is not the same as the rest.

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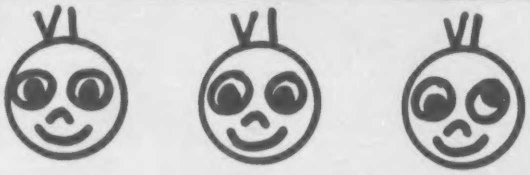

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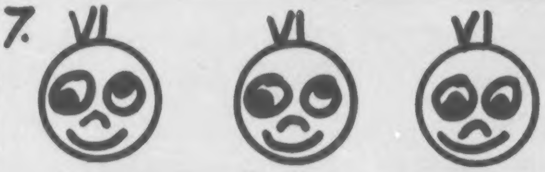

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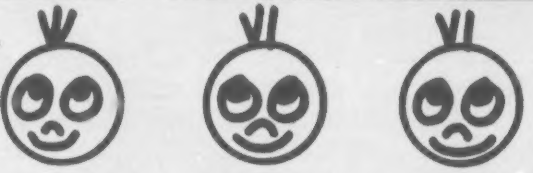

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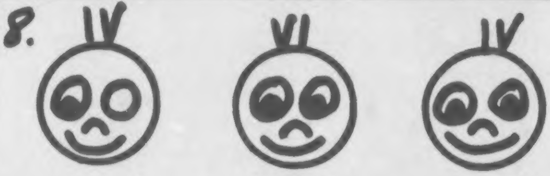

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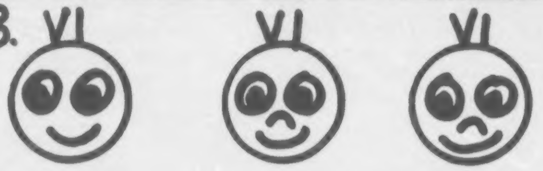

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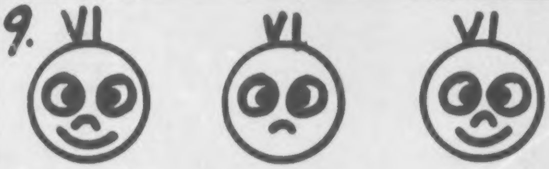

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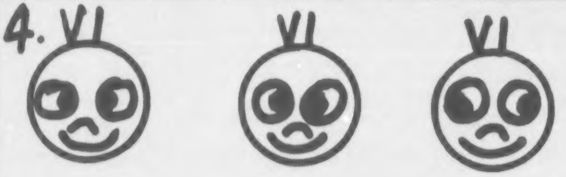
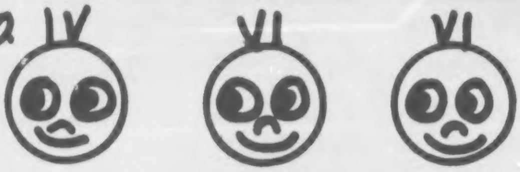


10.


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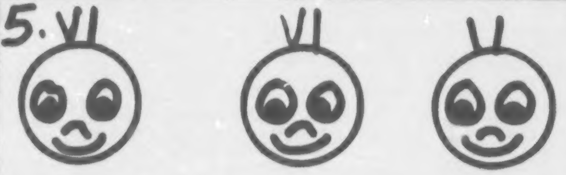

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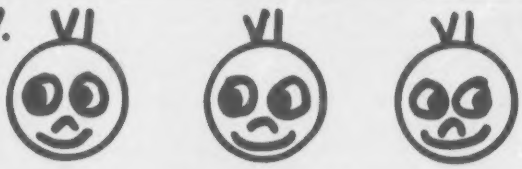

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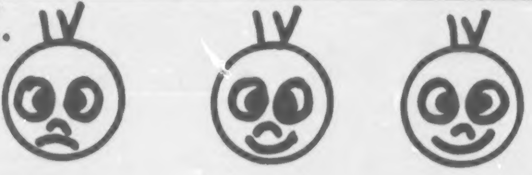

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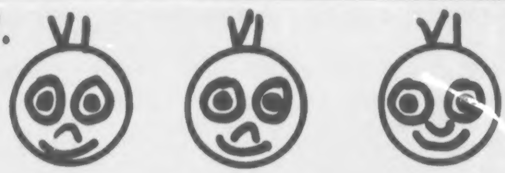
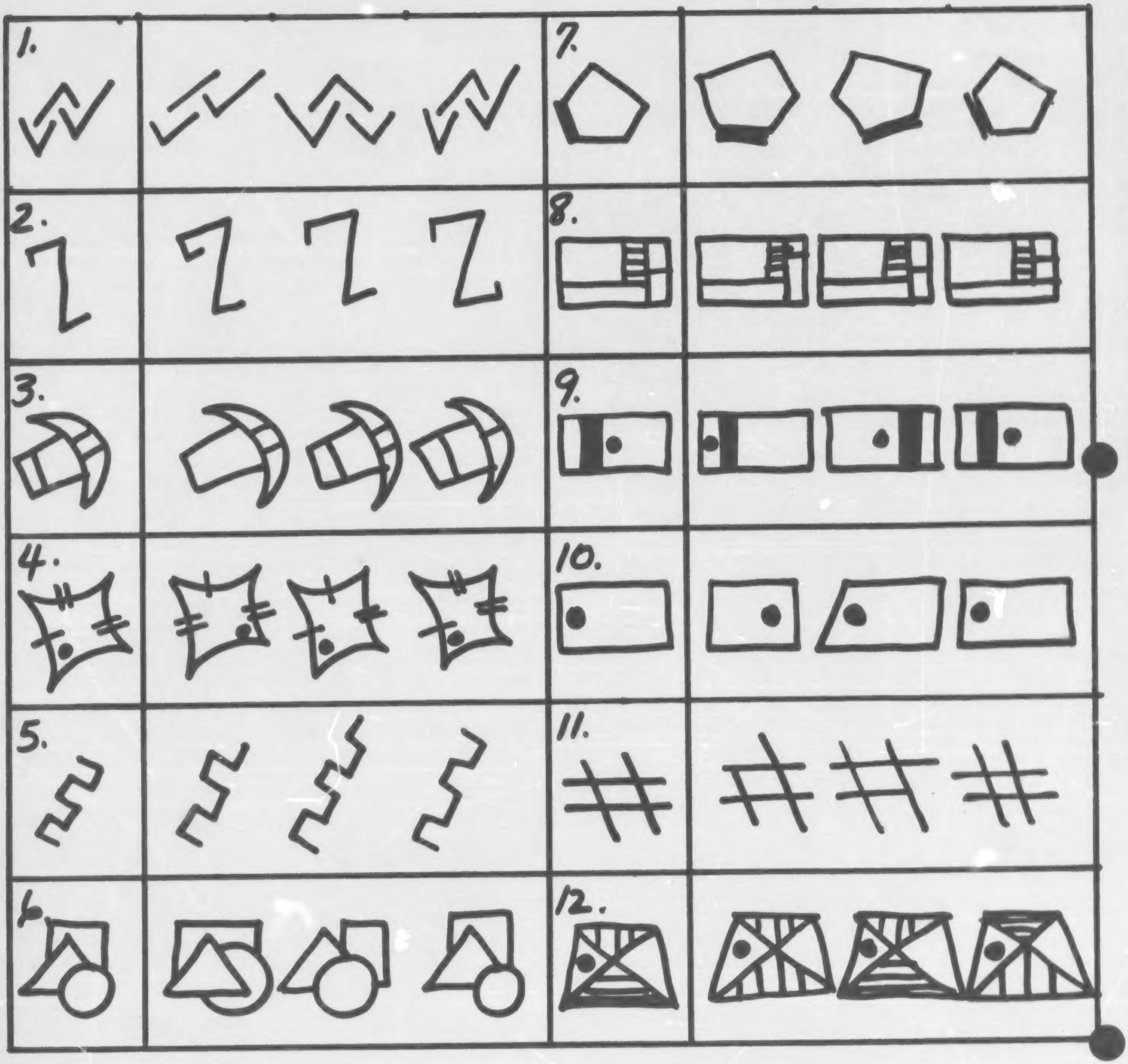


FINDING SIMILARITIES

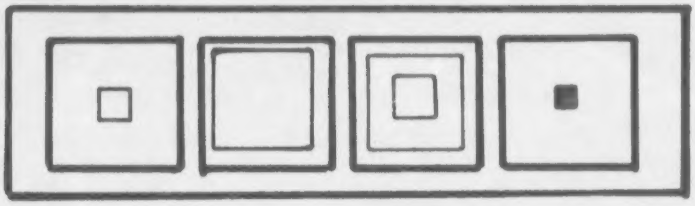
In the following boxes find the drawing that is the same as the first and circle it.

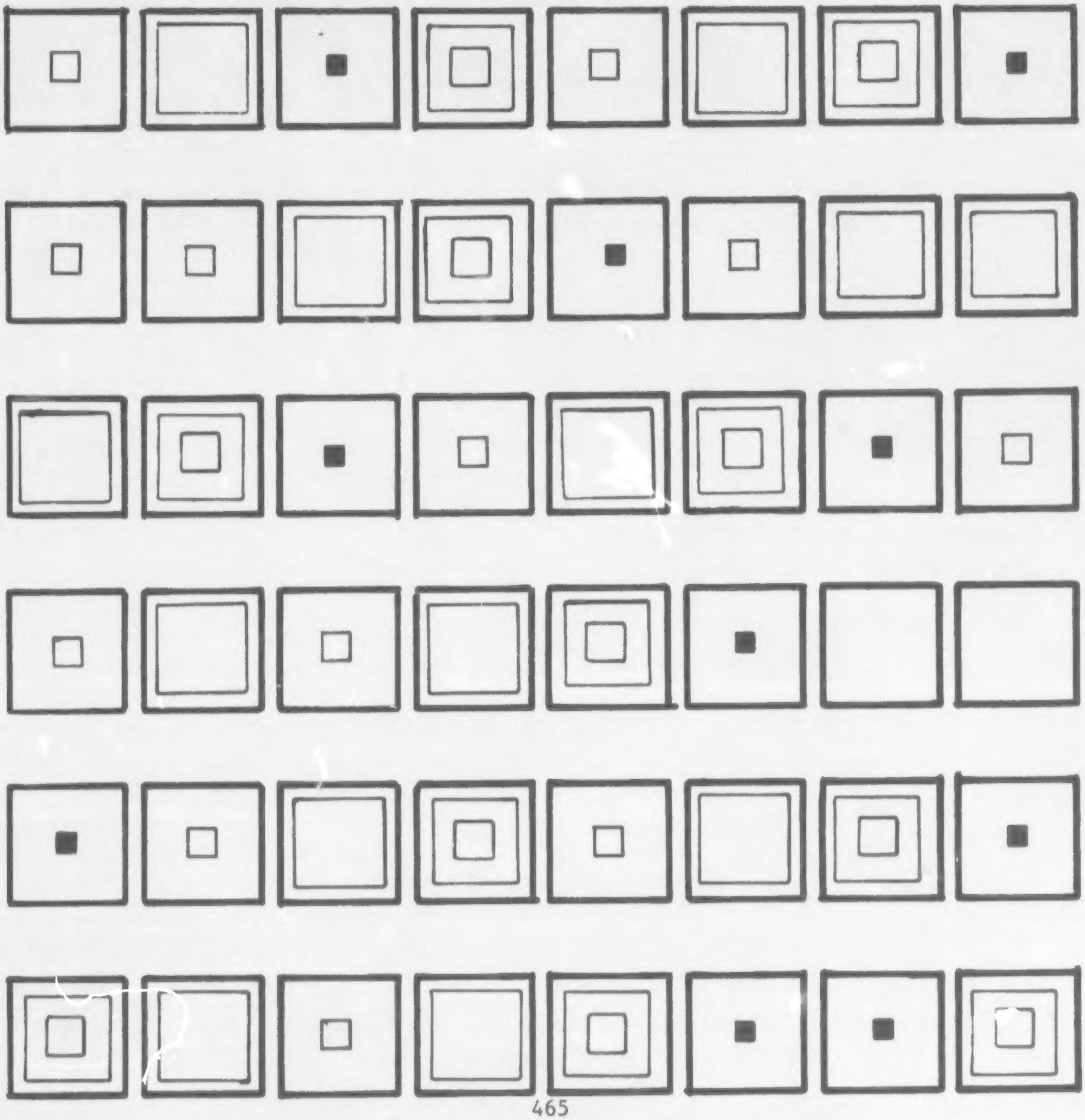

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

EFU-3

FIND FOUR FIGURES

Find the four figures below together in this order and draw a circle around them.





EFC-1

CIRCLE THE WORDS

Circle the items that are yellow and round.

egg yolk
lemon
orange
banana
dip of lemon ice cream
sunflower
peach
ball of cheese
baseball
rose
mustard seed
ear of corn
caution light
dandelion
sun

Circle the items that make a sound.

leaves
hammer
saw
wind
flowers
clouds
snow
birds
stick
light bulb
clock
snake in the grass
fish
campfire
stars
water
sun
rocks
rain
popcorn

MEASUREMENT (SIMPLE)

Use rods cut from Set 1 (next page) to answer the following questions:

1. Which rod is the longer rod? ________________________________

2. Which rod is the shortest? ________________________________

3. Which rod is twice as long as Rod D? ________________________

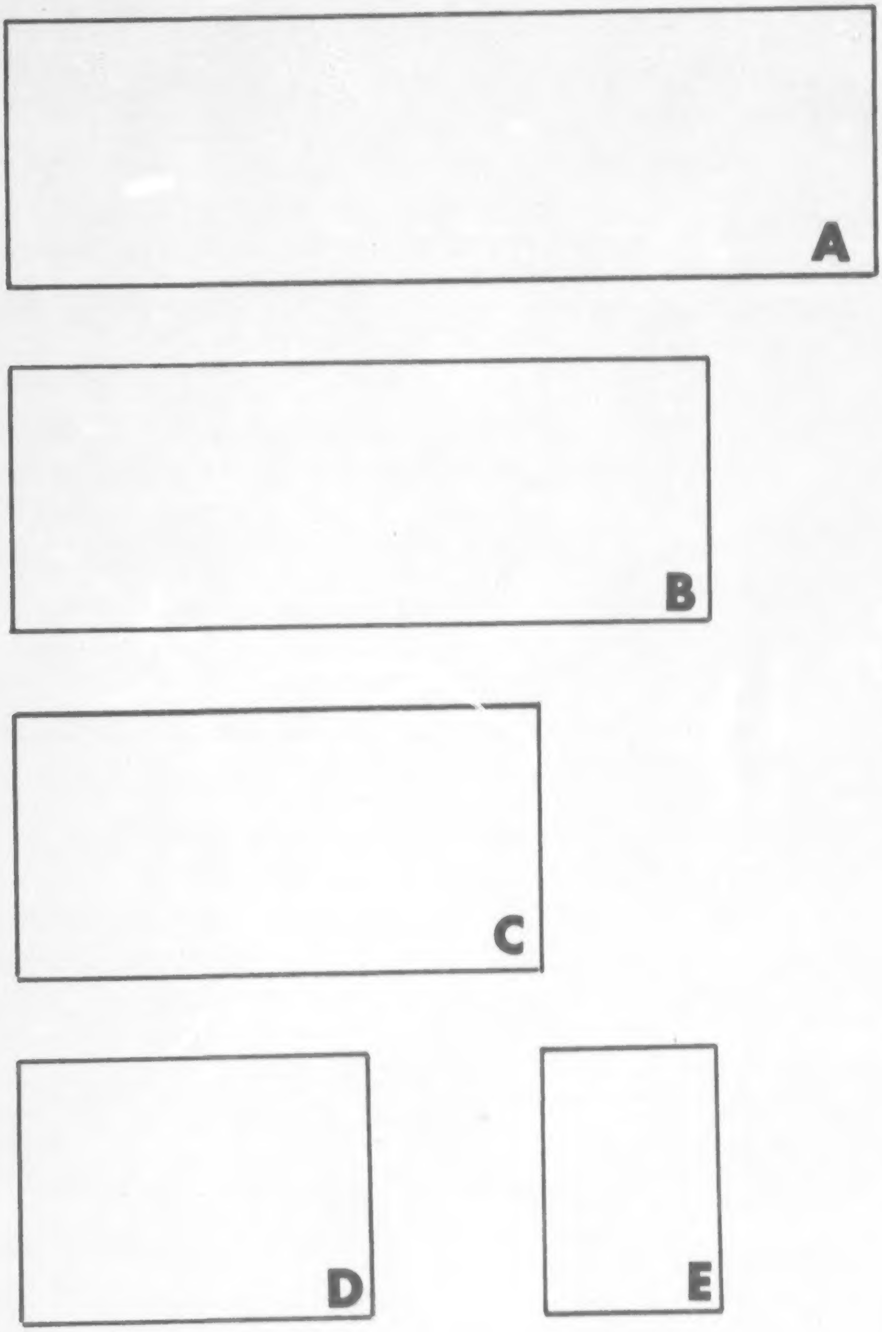
4. Which rod would you put with Rod C to make it the same length as Rod A?

   ____

5. Which other two rods can you put together that would be the same length as Rod A? ________________________________

6. Which two rods would be the same length as Rod B? ______________

PATTERNS FOR RODS - SET 1



MEASUREMENT (COMPLEX)

Use the rods cut from Sets 1 and 2 (next page) to answer the following questions:

1. Which rod is half the length of Rod F? ____________________

2. Which rods would you add to Rod A to make it equal to Rod F? ________

3. Does Rod A compare to Rod F the same as Rod C compares to Rod H? ______

4. Is Rod C to Rod B the same as Rod E is to Rod D? ______________

5. Does Rod B relate to Rod A as Rod H relates to Rod G? ____________

6. Is Rod H to Rod C as Rod C is to Rod H? ____________________

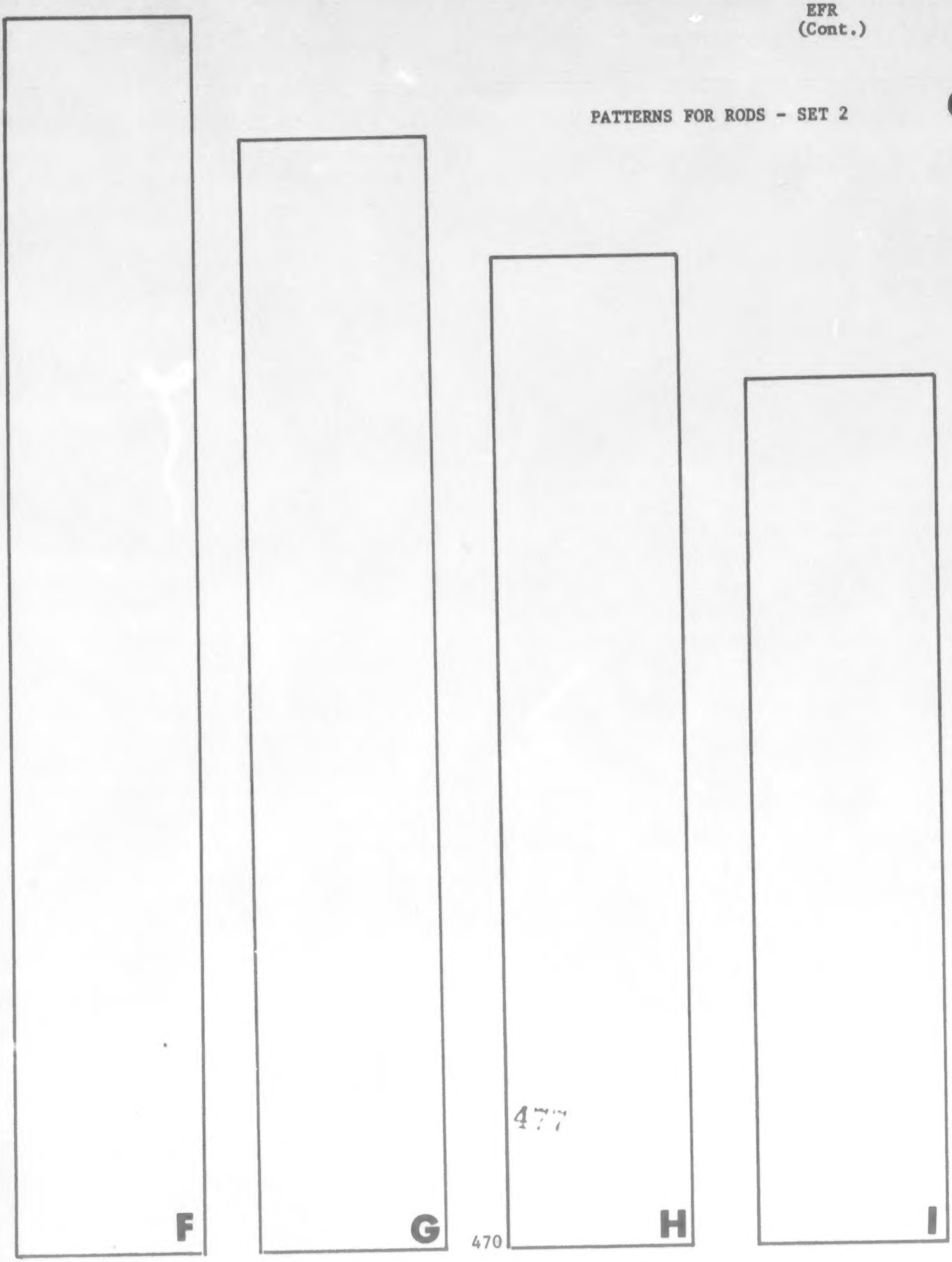
7. Is Rod C to Rod I as Rod D is to Rod A? ____________________

8. Rod A is to Rod B as Rod I is to ________________________

9. Rod C is to Rod H as Rod D is to ________________________

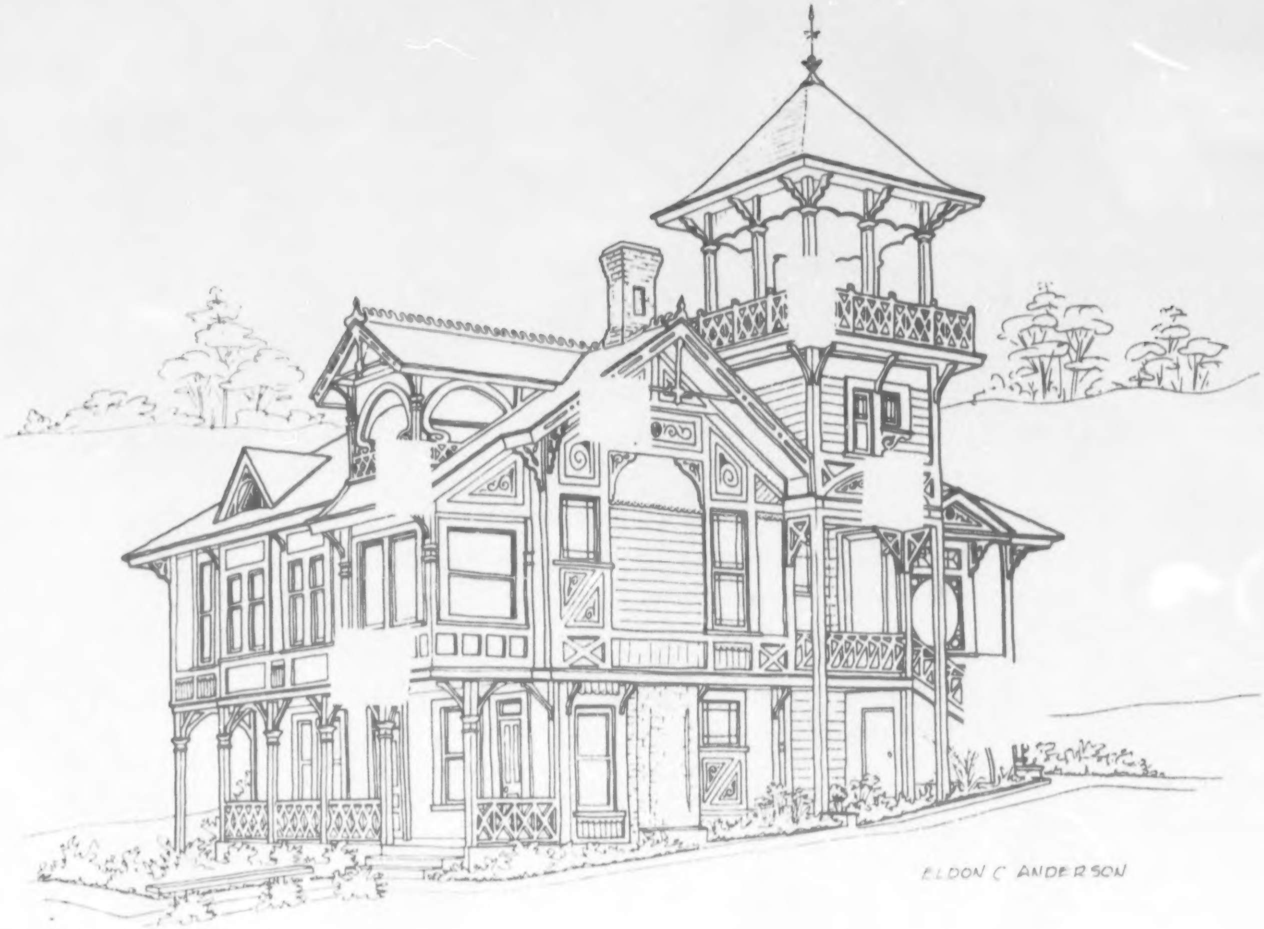
10. Rod F is to Rod ________ as Rod ________ is to Rod D.

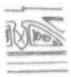
PATTERNS FOR RODS - SET 2

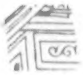


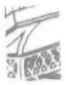
HOUSE PUZZLE

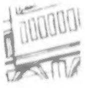
Cut out the small squares and fit them into the inserts on the picture.

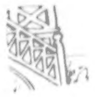

ELDON C ANDERSON

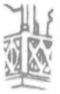








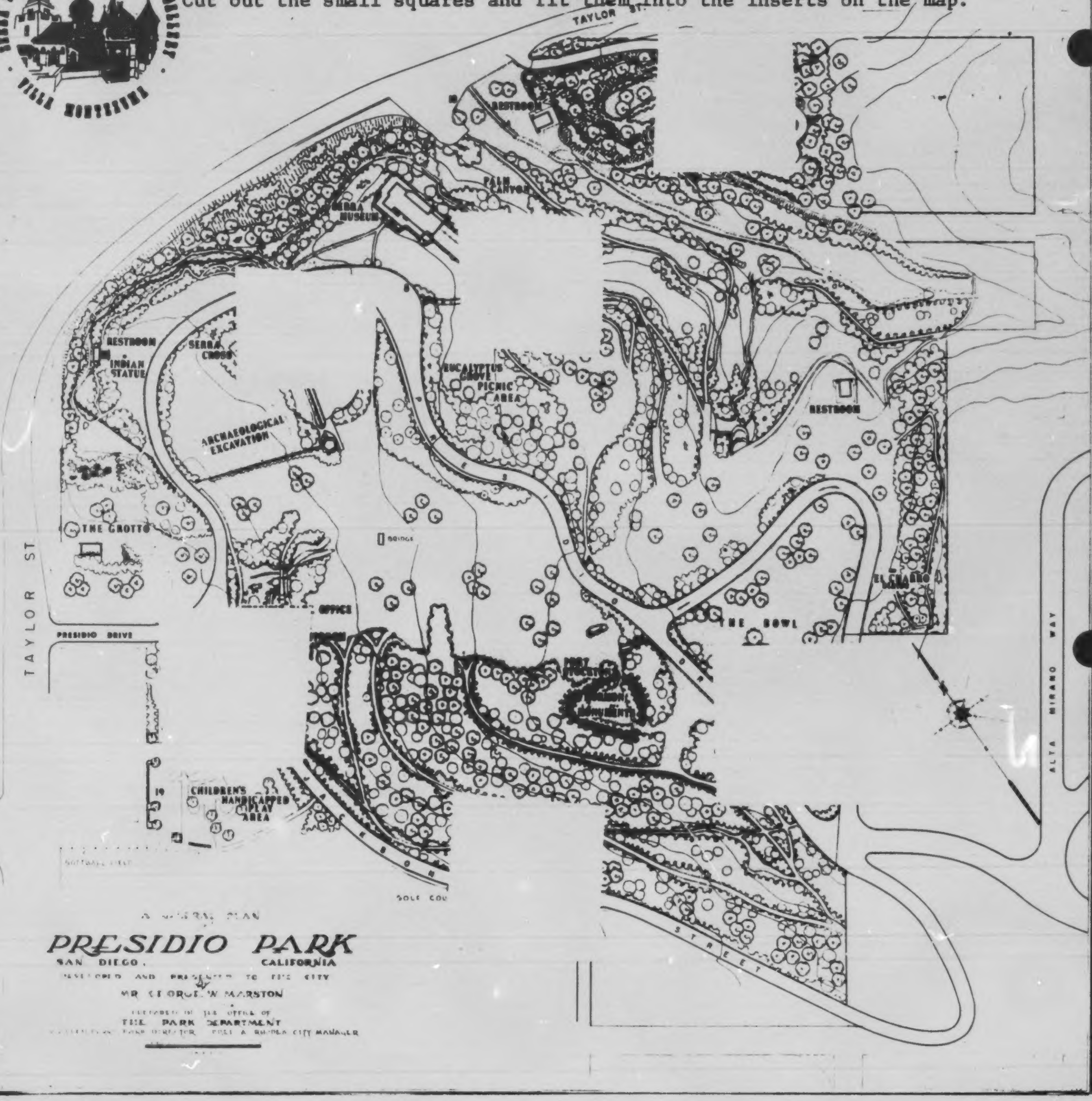




SERRA MUSEUM, LIBRARY & TOWER GALLERY · VILLA MONTEZUMA

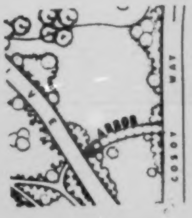
MAP PUZZLE

Cut out the small squares and fit them into the inserts on the map.


TAYLOR ST.
RESTROOM
PALM CANYON
SERRA MUSEUM
RESTROOM
INDIAN STATUE
SERRA CROSS
EUCALYPTUS GROVE PICNIC AREA
ARCHAEOLOGICAL EXCAVATION
RESTROOM
THE GROTTO
BRIDGE
EL CHARRO
THE BOWL
TAYLOR ST
PRESIDIO DRIVE
OFFICE
ALTA MIRANO WAY
CHILDREN'S HANDICAPPED PLAY AREA
SOFTBALL FIELD
STREET
A GENERAL PLAN
PRESIDIO PARK
SAN DIEGO, CALIFORNIA
DEVELOPED AND PRESENTED TO THE CITY
MR GEORGE W MARSTON
THE PARK DEPARTMENT

19
PRESIDIO RECREATION CENTER

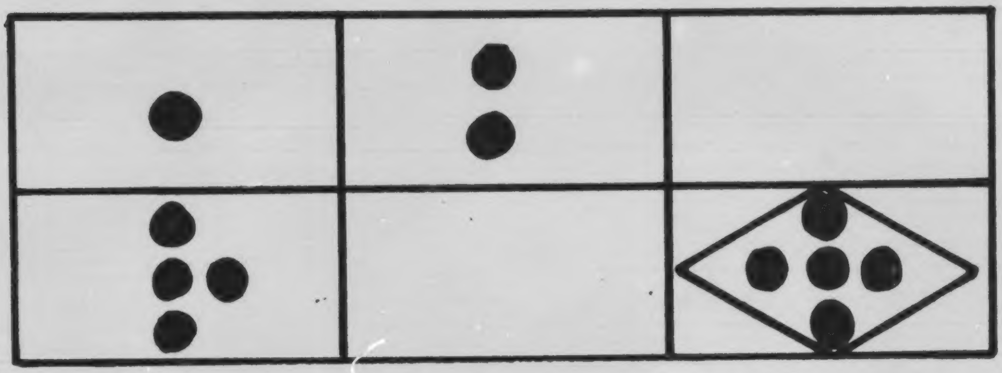
FATHER SERRA
92

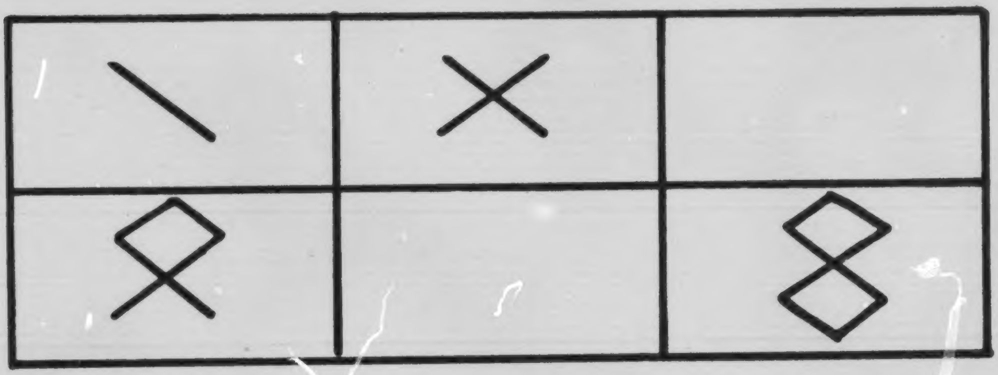


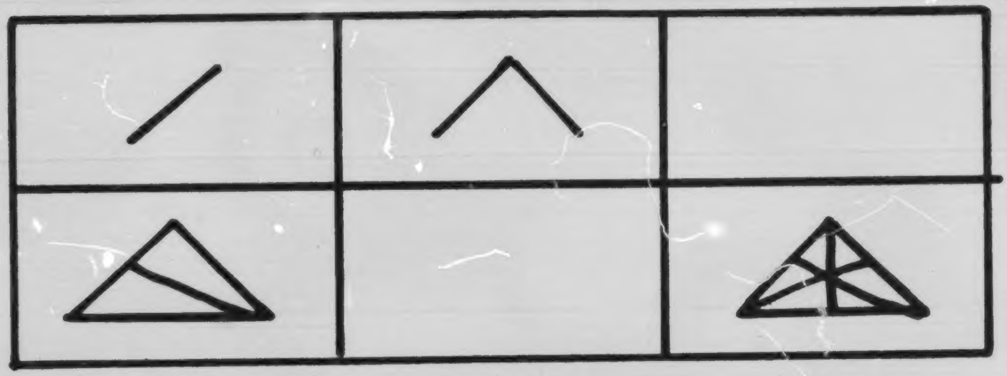
20
INSPIRATION POINT

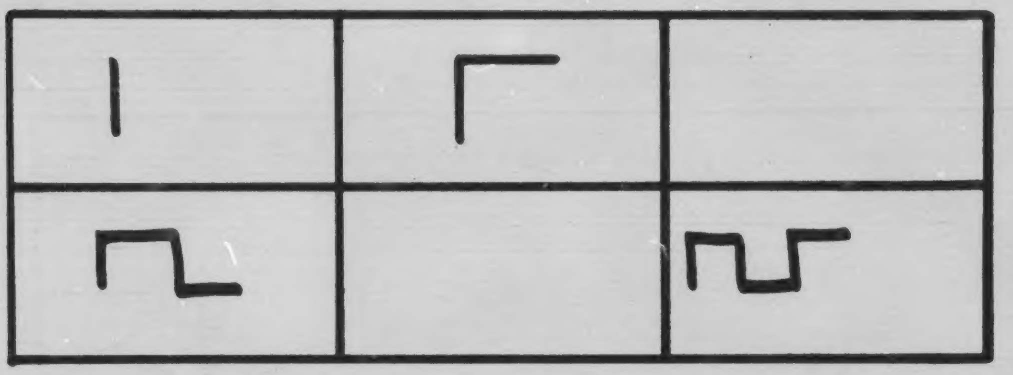
COMPLETE THE SEQUENCE

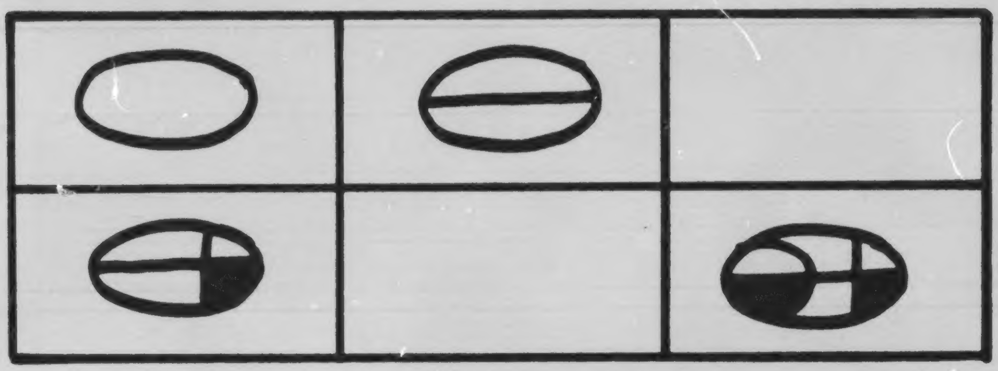
Complete the missing sections of the figure sequence. Something has been added to each figure to make it different. You need to add the figures in the blank sections.

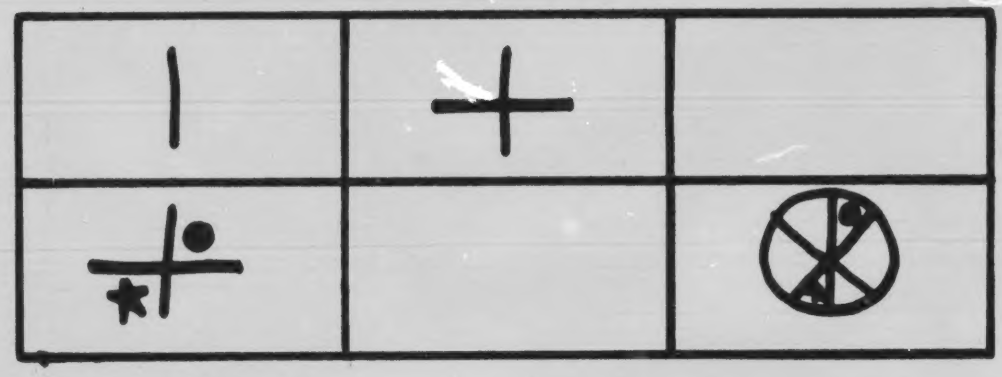










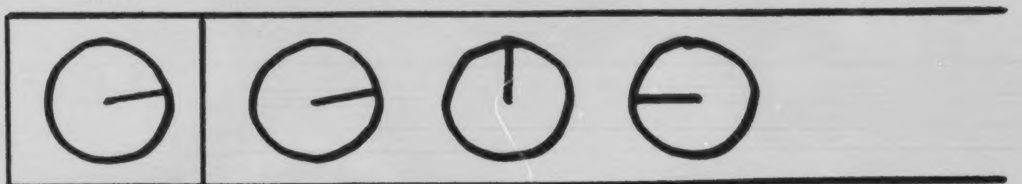


EFT-1

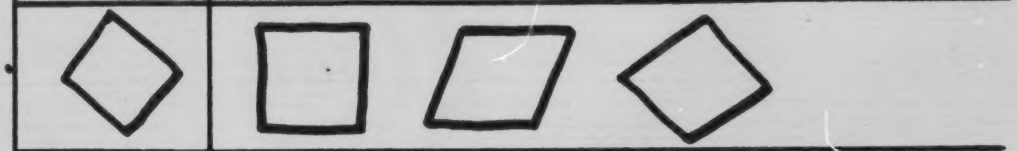
MATCHING FIGURES

Circle the figure in the box that is the same as the one in the box at the left. Some of the figures are turned or "flipped."

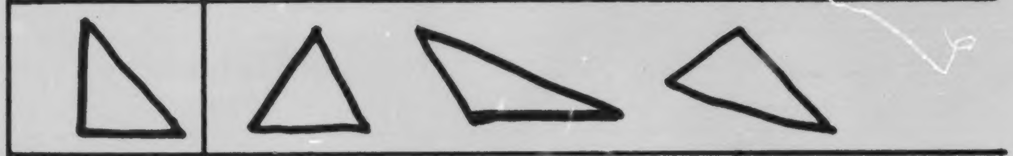
1.



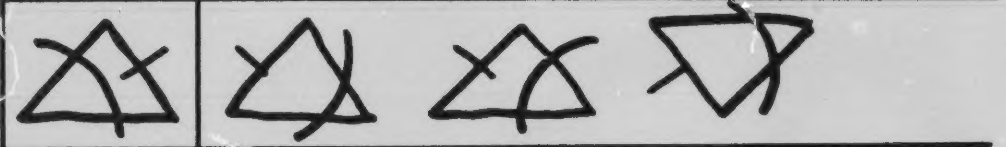
2.



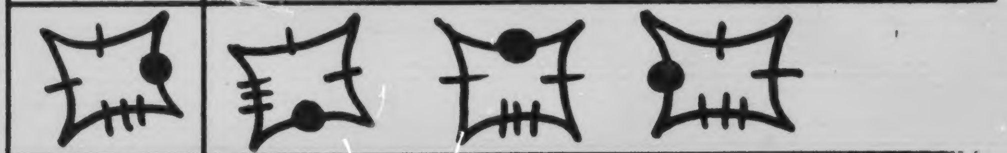
3.



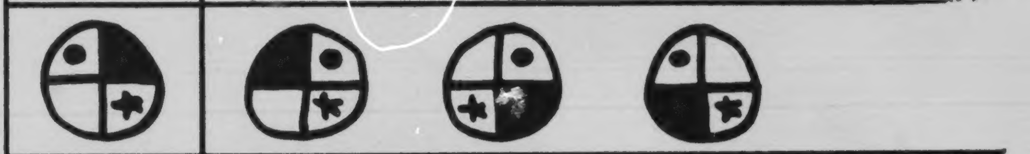
4.



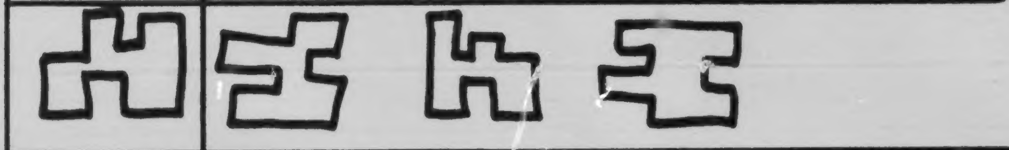
5.



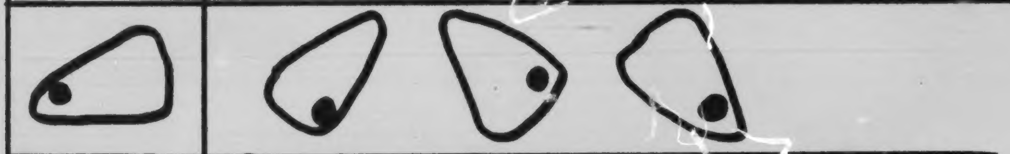
6.



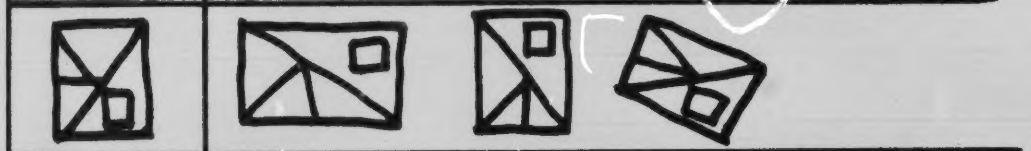
7.



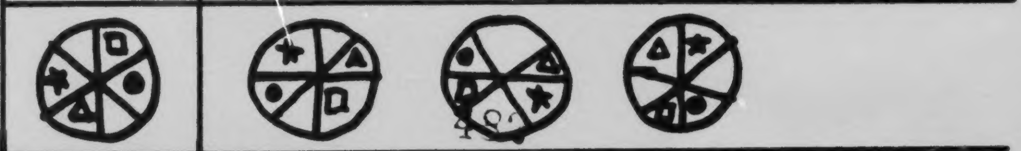
8.



9.



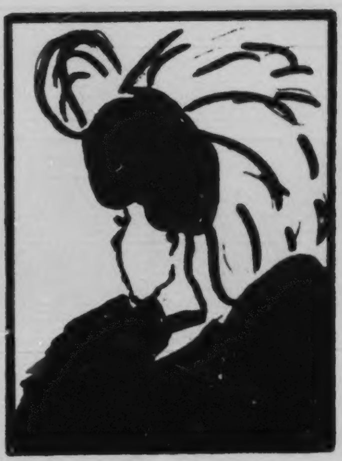
10

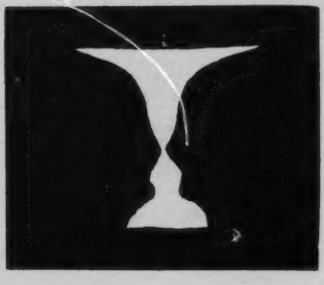


PROBLEMS AND PUZZLES

Have you learned to look at a problem in more than one way?

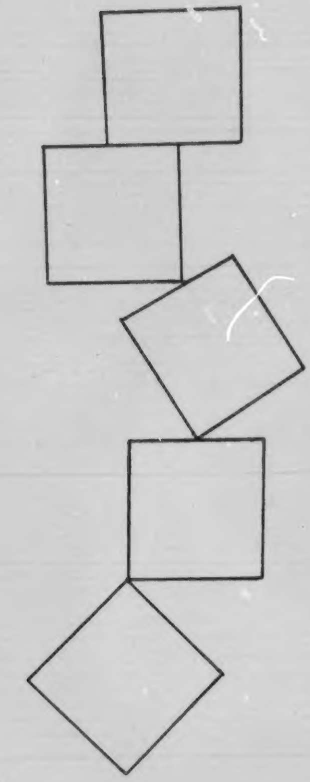
Describe this picture.
Ask your friends to describe it.





Look at this picture. What do you see? What do you friends see?

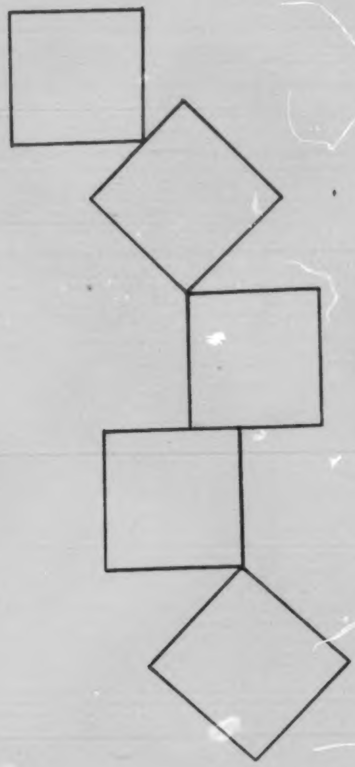
ONE-WAY COMMUNICATION



Variation I

Teacher explains the following instructions to the class:

1. Study the figures above.
2. With your back to the group, you are to instruct the students how to draw them.
3. Begin with the top square and describe each in succession, taking particular note of the relationship of each to the preceding one.
4. No questions are allowed.



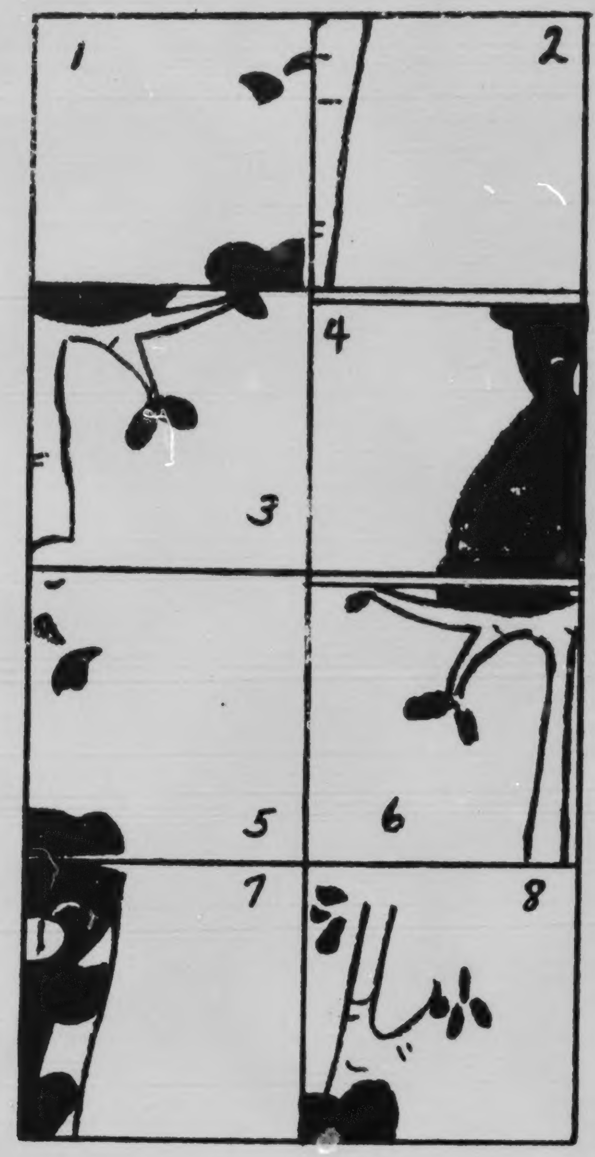
Variation II

Teacher explains the following instructions to the class:

1. Study the figures above.
2. Facing the group, you are to instruct the participants how to draw them.
3. Begin with the top square and describe each in succession, taking particular note of the relation of each to the preceding one.
4. Answer all questions from students and repeat if necessary.

SQUARES PUZZLE

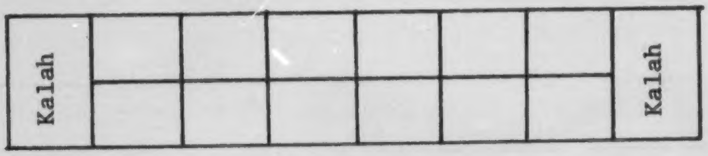
1. Cut the squares apart.
2. Decide which of the squares would *not* go together to make a puzzle picture.
3. Put the squares together to make a puzzle picture.



KALAH

Materials

1. Playing board with 12 spaces in two rows with one larger space on each end as shown below. (Egg cartons with the Kalah space made by gluing half the top on either end is an easy solution for a playing board.)



2. 36 beans or other playing pieces

Directions

1. Players sit facing one another with their Kalah on the right-hand side. Their spaces are the ones directly in front of them.

2. When learning to play the game, the players start with 36 beans distributed by threes into each of the 12 unmarked small spaces.

3. All moves are to be made by placing beans one by one in the spaces in a counterclockwise direction.

4. The starting player picks up all of the beans in one of her/his spaces.

5. S/He then places a bean into the next space (in a counterclockwise direction) and continues placing one bean in each space around the board continuing in the counterclockwise direction until s/he runs out of beans.

6. If there are enough beans, s/he should place one bean in her/his own Kalah. On the other hand, s/he may never place one of her/his beans in the opponent's Kalah.

7. If the last bean placed goes into the player's Kalah, s/he gets another turn.

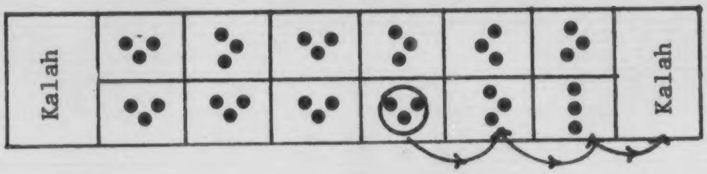
8. When the last bean placed lands in an empty space on her/his own side, that bean plus those opposite in the opponent's space are placed in the player's own Kalah.

9. When a player empties all of the beans from the spaces on her/his side, the opponent then places in her/his own Kalah all the beans which remain on her/his side. (This means that one needs to be careful about going completely out, as it is not always to one's advantage.)

10. The winner is the one who ends up with the greater number of beans.

Example: This shows several moves at the start of a game.

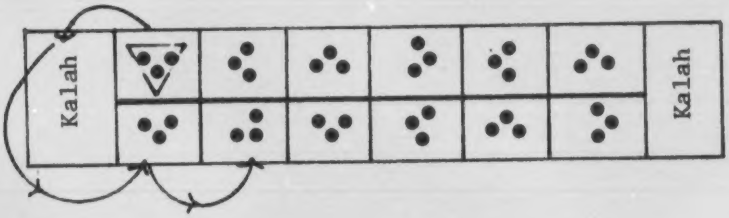
1. Illustration I - Move to your own Kalah.



If a player (bottom side) starts by taking the encircled beans and placing them, s/he would place her/his last bean in her/his own Kalah and would get another turn.

2. Illustration II - Move to opponent's side.

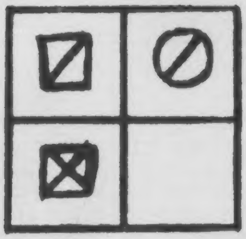
The player with the triangle around her/his beans places them counterclockwise as show.

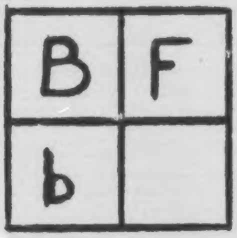


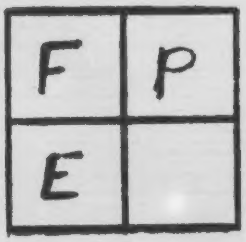
Note: This is a version of one of the oldest known mathematical games. It is known to have been played throughout the East for 7,000 years. An interesting account of its history may be found in the May 5, 1964, *Arithmetic Teacher*, pp. 326-30.

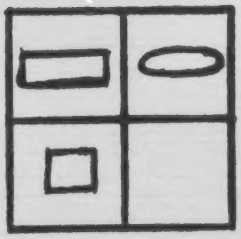
COMPLETE THE DRAWINGS

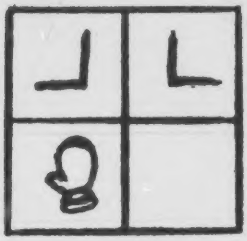
Study the three items in the boxes. The figure in the top half is a clue to what belongs in the bottom half. Complete the series of drawings.

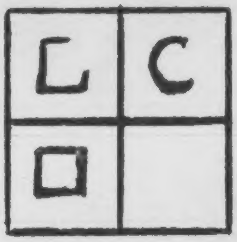


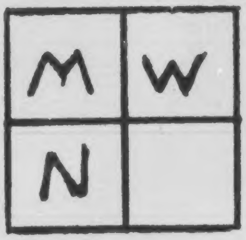


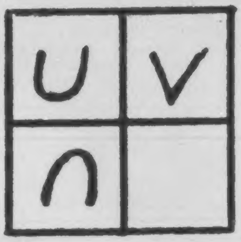


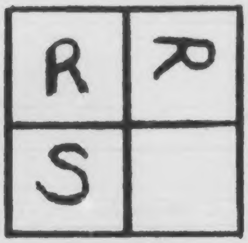


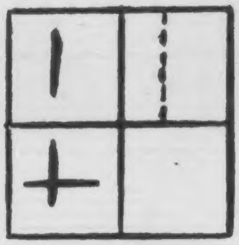


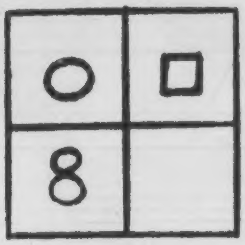


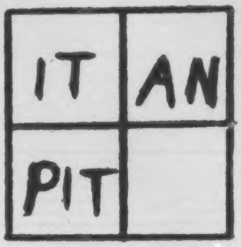


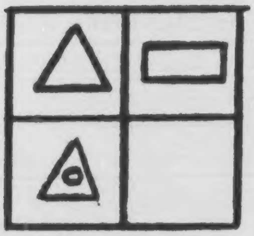


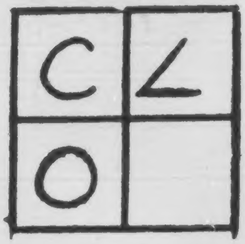


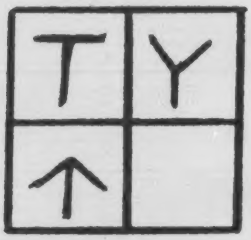


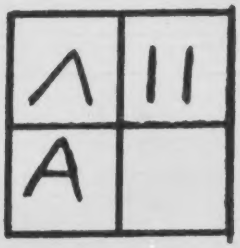






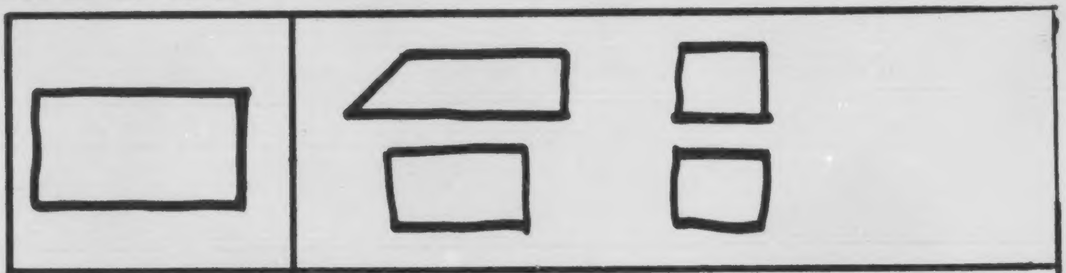


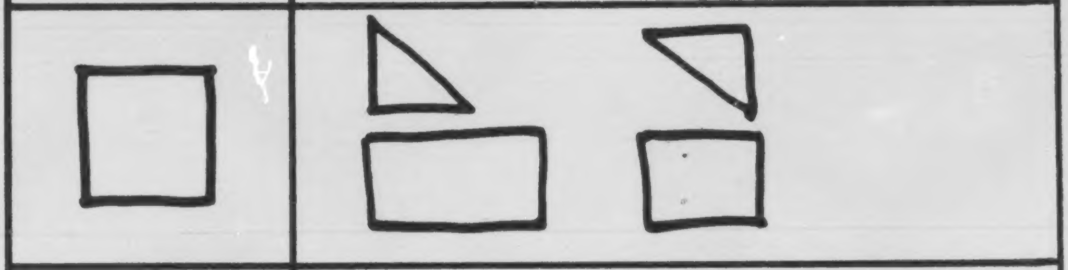


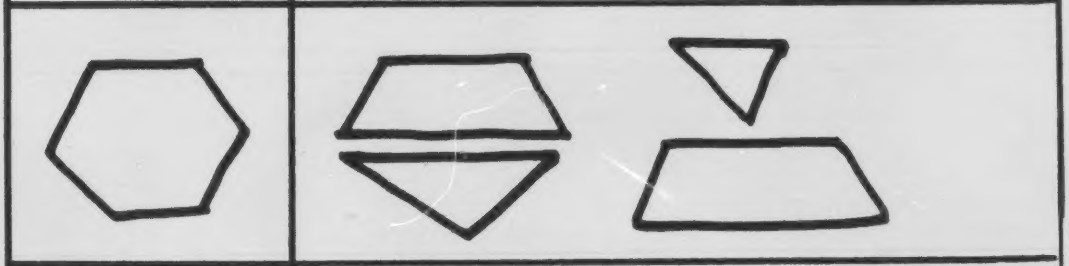


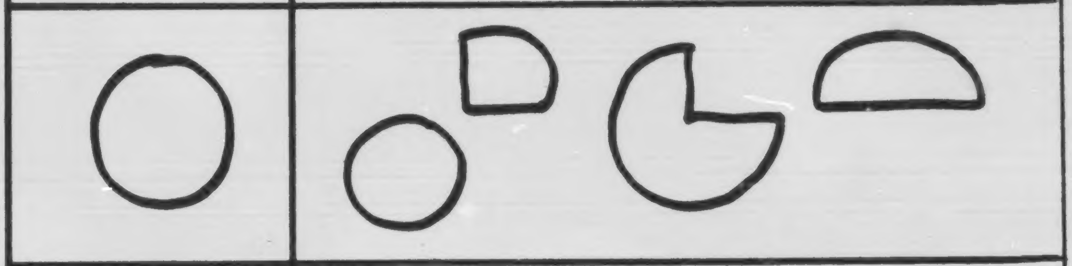
FIND THE PIECES

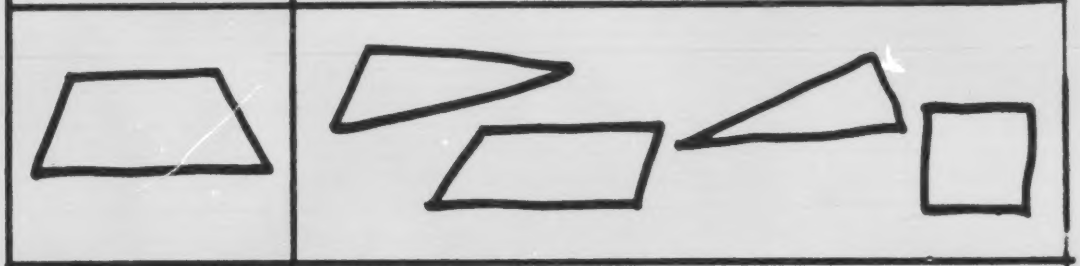
Draw a circle around the two figures in the right-hand box which will make the figures at the left.

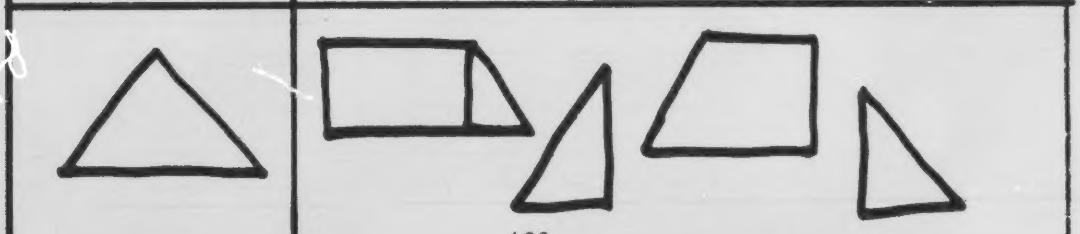






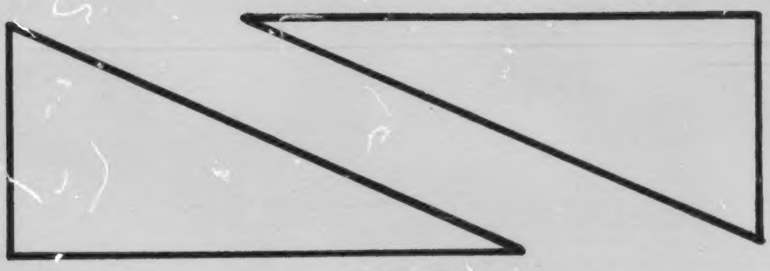


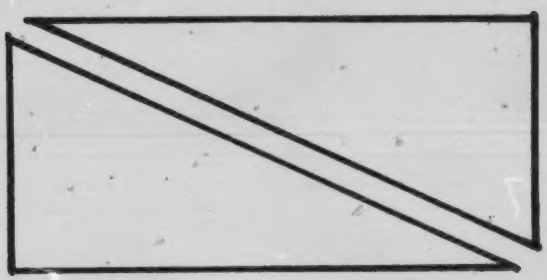


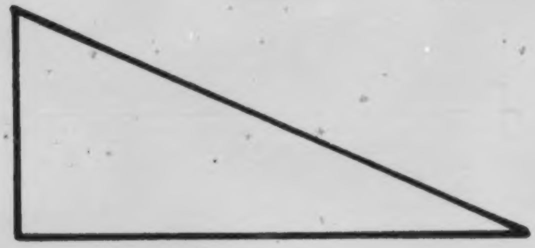


MAKE A SQUARE

Cut out the five triangles and arrange them to make a square. Only one of the pieces may be cut into.

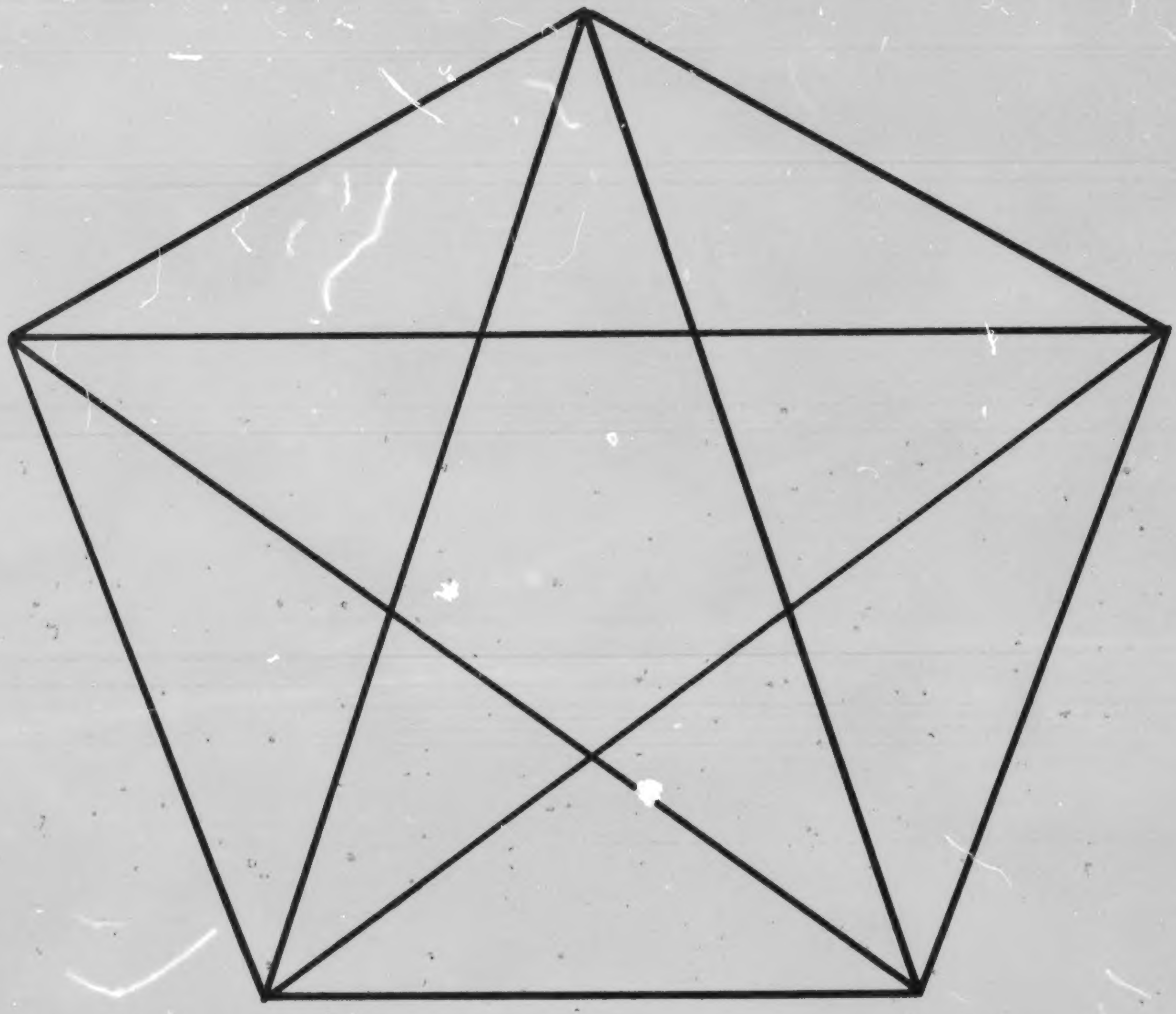






COUNT THE TRIANGLES

How many triangles are there in the figure below?



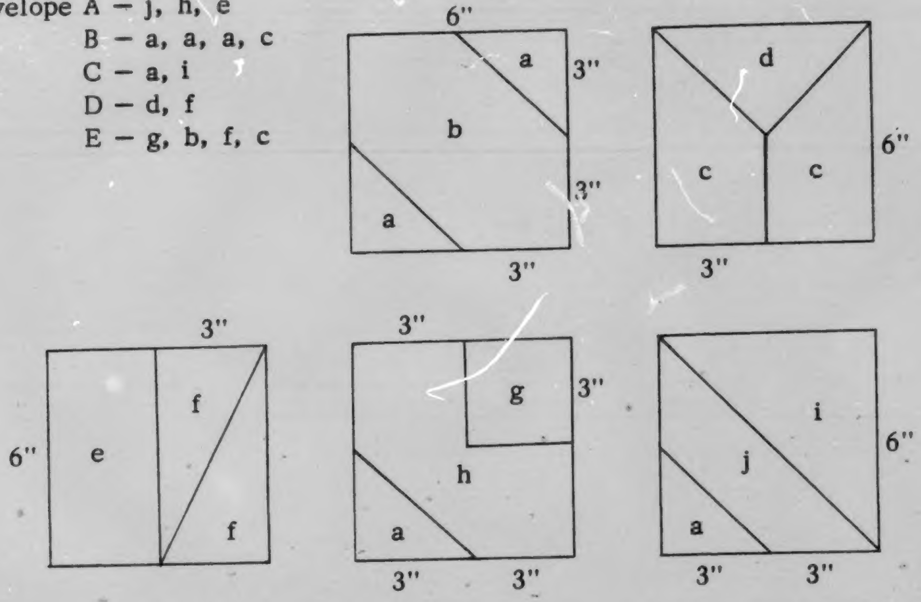
PUZZLE SQUARES

This activity may also be found in the area of comprehension. It is used here in the area of evaluation because of the decision-making process involved.

Preparation of Puzzle:

A puzzle set consists of five envelopes containing pieces of stiff paper cut into patterns that will cover 6-inch squares. Cut the squares into parts and lightly pencil the letters "a" through "j" as shown below. Then mark the envelopes A through E and distribute the pieces thus:

Envelope A – j, h, e
B – a, a, a, c
C – a, i
D – d, f
E – g, b, f, c



Erase the small letters on the pieces and instead write the envelope letters A through E so that the pieces can be easily returned for reuse.

Several combinations of the pieces will form one or two squares, but only one combination will form five squares.

Instructions for Students:

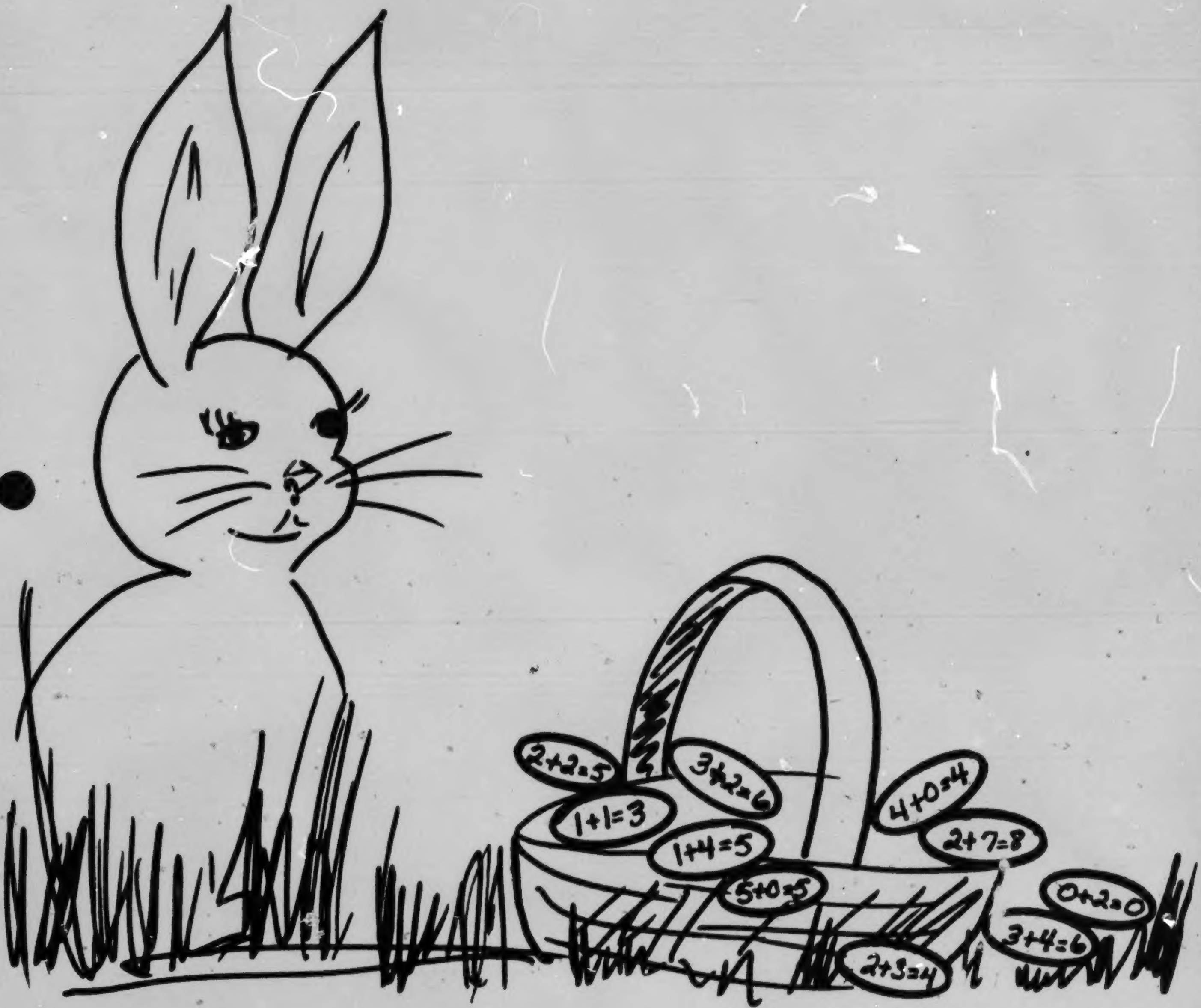
Each person should have an envelope containing pieces for forming squares. At the signal the task of the group is to form five squares of equal size. The task is not complete until everyone has before him a perfect square and all the squares are of the same size.

These are the Rules:

1. No member may speak.
2. No member may signal in any way that he wants a card.
3. Members may give cards to others, BUT NO ONE MAY TAKE A PIECE OF A CARD FROM ANOTHER.

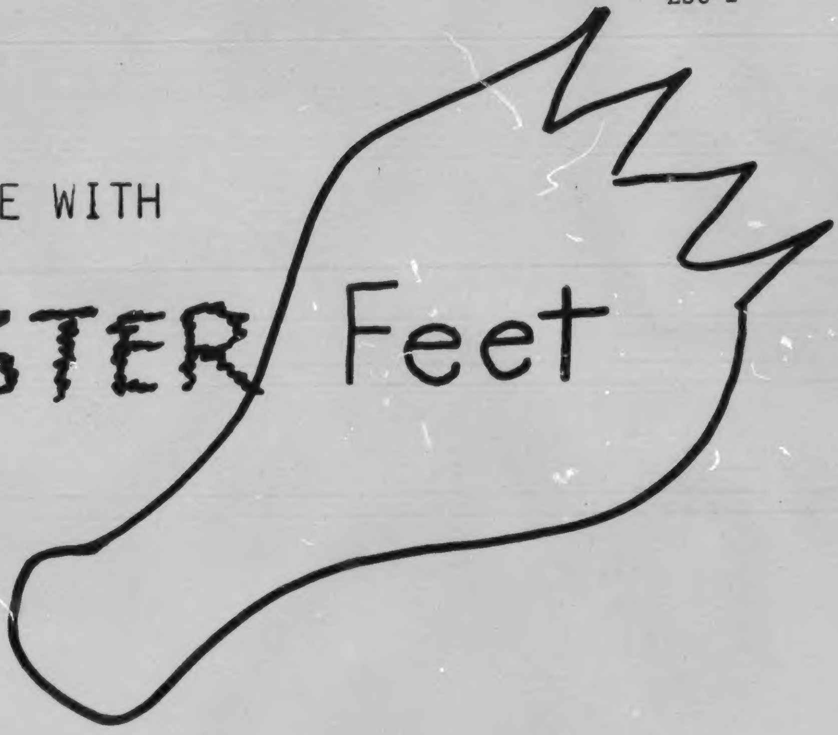
MOTHER BUNNY'S EGGS

Some one made mistakes on Mother Bunny's eggs. Write the mistakes on a paper and correct them quickly.


2+2=5
3+2=6
4+0=4
1+1=3
2+7=8
1+4=5
5+0=5
0+2=0
3+4=6
2+3=4

LET'S MEASURE WITH

MONSTER Feet



1. Make a monster foot on a piece of construction paper. Make it BIG!
2. Measure with your monster foot to find out the distance or height in "monster feet" ...

to the office _____ your best friend _____

the classroom door _____ your teacher _____

the chalkboard _____ You! _____

your desk _____ the teacher's desk _____

What else can you measure?

HOW BIG ARE YOU?

Materials

Roving - a) 1 metre in length
b) 30 centimetres

With short length of roving measure and record --

-- the length of your foot (toe to heel)

-- around your foot

-- around your friend's foot

-- around your hand

-- around your friend's hand

	You	Friend
Foot		
Hand		
Waist		
Height		

HOW BIG IS IT?

Use the short length and long length of roving. Measure things in the room. Compare sizes.

desks	books
chalkrail	chairs

Anything else you can find.

Who would need measurements like these? Why?

HOW BIG ARE YOU?

Collect the height measurements of your group.

Discover:

1. Who is the tallest child in the group?

2. Who is the shortest child in the group?

For The Experts:

What is the average height of the members of your group?

FIND THE LETTERS

Draw a line around the letters UVMXLP below every time you find them in that order on the page. Read up and down and across, but not diagonally.

X	L	U	V	M	X	L	P	M	V
U	V	M	L	X	P	U	M	X	L
M	X	U	V	X	M	L	P	V	U
X	L	M	U	V	X	P	X	L	V
U	V	M	U	V	M	X	L	P	M
V	X	L	V	M	X	L	P	U	X
M	V	X	U	V	M	P	X	L	L
X	U	L	M	P	U	M	X	L	P
L	U	V	X	X	L	X	V	U	M
P	L	U	V	M	X	L	P	L	P

ESU-6

CIRCLE AND CROSS OUT

1. Circle the nine Ps with orange.
2. Cross out the six Gs.
3. Circle all the 9s in red.
4. Circle the three Ms in blue.
5. Cross out the Js in green.
6. Circle the five Ns in yellow.

P	N	G	X	P	Y	G	Z
A	B	J	M	C	J	D	P
E	G	F	G	H	I	K	L
O	R	S	T	M	U	V	W
X	9	3	G	2	B	4	P
5	N	A	B	C	6	D	7
Y	1	Y	Z	J	8	D	E
F	P	8	N	H	I	P	K
L	N	O	R	T	N	U	W
M	X	X	R	Y	P	Z	Q
A	B	D	F	I	W	O	X
C	P	E	R	H	G	P	Y

SAME OR DIFFERENT? (SIMPLE)

Study each pair of figures and words to decide if they are the same or different. If they are the same, write S on the line; if different, write D.

1.	36	63	____________
2.	same	some	____________
3.	their	this	____________
4.	42	42	____________
5.	396	369	____________
6.	was	was	____________
7.	quiet	quite	____________
8.	saw	was	____________
9.	68	86	____________
10.	18	18	____________
11.	210	201	____________
12.	to	too	____________
13.	went	want	____________
14.	come	come	____________
15.	hid	hide	____________
16.	45	54	____________
17.	13	13	____________
18.	bump	dump	____________
19.	bye	by	____________
20.	head	head	____________

ESU-8

SAME OR DIFFERENT? (COMPLEX)

Which pairs below are the same and which are different? Beside the pairs that are the same, write S; beside the pairs that are different, write D.

1.	ZUZ	UZZ	____________
2.	963	693	____________
3.	account	account	____________
4.	CZ132	CZ123	____________
5.	36584	36584	____________
6.	92024	92034	____________
7.	abdce	abdce	____________
8.	2563	2593	____________
9.	Jones, Thomas N.	Jones, Thomas M.	____________
10.	Westonhill Dr.	2511 Westhill Dr.	____________
11.	Liesl, Jeffrey	Leisl, Jeffrey	____________
12.	143 621	143621	____________
13.	CHZ 124	CHS124	____________
14.	a b c	ACB	____________
15.	460 7624	4364260	____________

FIND THE WORDS

Circle the words which are made up of the letters found in the given word.

1. Given: photosnythesis

session
totem
histone
optics

2. Given: chloroplast

pastor
locust
roost
cloth

3. Given: dichotomy

idiom
city
mood
tidy

4. Given: chamelon

clean
enamel
hence
enormous

5. Given: astronaut

snatch
start
unto
aunt

6. Given: publisher

push
issue
rebus
sulphur

VOWEL-CONSONANT ARRANGEMENT

Place the following words in the proper column according to their vowel and consonant arrangement.

happen
gasoline
apart
certain
pilot
collect
soon
pioneer
care
learn
person
different
force
free
king
silence
pretend
honest
purple
joke

Double Vowel	V-C-V Vowel-Consonant-Vowel	C-V-C Consonant-Vowel-Consonant	Double Consonant

ESC-2

CLASSIFICATION BY MULTIPLES

Place the numbers in their proper classifications below.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Multiples of 2	Multiples of 3	Multiples of 4

Multiples of both 3 and 6	Multiples of both 5 and 10	Numbers that are primes

CROSS OUT WORDS

In the groups of words below, one word does not belong. Find the word that does not sound like the rest and cross it out.

1.	soak	choke	2.	bland	came
	note	cloth		swam	sand
3.	juice	loose	4.	balloon	some
	lose	sluice		spoon	moon
5.	slap	cable	6.	chalk	hallow
	cat	snap		walk	caught
7.	school	loot	8.	box	knots
	pool	cruel		clocks	knock
9.	bright	kite	10.	stare	narrate
	knight	kink		chair	store
11.	lime	thyme	12.	gum	tomb
	shine	quiet		thumb	come

A WORD PUZZLE

Each word in the puzzle ends the same. Use the clues to make the right word.

Clues

1. What you do in the oven
2. The earth moves and shakes
3. A piece of wood
4. To capture
5. A crystal of snow
6. Something wrong
7. To take
8. Collection of ingredients
9. Not fully grown
10. Imaginative stories or writings
11. Your name in writing
12. Position of the body

1. __ake
2. __ __ake
3. __ __ake
4. __ake
5. __ __ake
6. __ __ __ __ake
7. __ __ __ture
8. __ __ __ture
9. __ __ __ __ture
10. __ __ __ __ __ __ture
11. __ __ __ __ __ture
12. __ __ __ture

ESR-1

WORD PAIRS

Circle the pair of words which is most like the given pair. Study the letters for your clue.

A. wheat-stern

1. grin - deserve
2. leave - field
3. heal - germ

B. aim-diet

1. dine - desk
2. fears - three
3. mail - field

C. nail-green

1. remain - deer
2. chin - cheese
3. leave - strain

D. scene-cheese

1. gleam - green
2. depend - breeze
3. ferry - lie

E. pioneer-happen

1. pretend - pilot
2. soon - purple
3. free - different

F. silence-honest

1. learn - joke
2. pretend - person
3. happen - soon

G. master-smarted

1. lime - climb
2. toads - total
3. most - mist

H. stop-pots

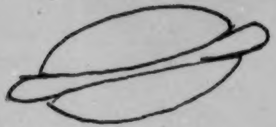
1. most - host
2. heic - icke
3. rat - tar

I. lept-slept

1. bell - fell
2. fell - fall
3. love - glove

J. cake-make

1. bell - tell
2. tick - tock
3. moose - mouse



FAMILY PICNIC

You are having a picnic in your backyard; 24 people will be there. Mother has asked your help. She wants you to buy:

- 6 pounds of hamburger
- 2 dozen hot dogs
- 2 dozen hot dog rolls
- 2 dozen hamburger buns

When you get to the store you find:

- Hot dogs - 10 in a package
- Hot dog rolls - 8 in a package
- Hamburger rolls - 8 in a package

1. How many packages of hot dogs will you buy? ______________________________

2. How many packages of hot dog rolls will you buy? _________________________

3. How many packages of hamburger rolls will you buy? _______________________

4. Which one did you have to buy extra of? _________________________________

LETTER RELATIONSHIPS

Look carefully at each given word. Can you find a relationship between the letters in the given word and one of the word pairs? Circle the pair that relates to the given word.

A. administer - adm

1. savage - sve
2. opaque - que
3. density - den

B. transportation - tion

1. celestial - tial
2. foreign - ei
3. voyage - vye

C. barbarian - ari

1. gaunt - aun
2. peculiarity - cul
3. austere - ere

D. disguise - dise

1. apathetic - thet
2. reassure - eaur
3. assert - asst

E. centimeter - meter

1. symmetry - meter
2. strength - ngth
3. measurement - ment

F. pentagon - ptn

1. triangular - lar
2. polygon - oly
3. mysterious - mts

g. lament - tnemal

1. puzzle - elzzup
2. motive - omtive
3. feather - therfea

H. zealous-slanderous

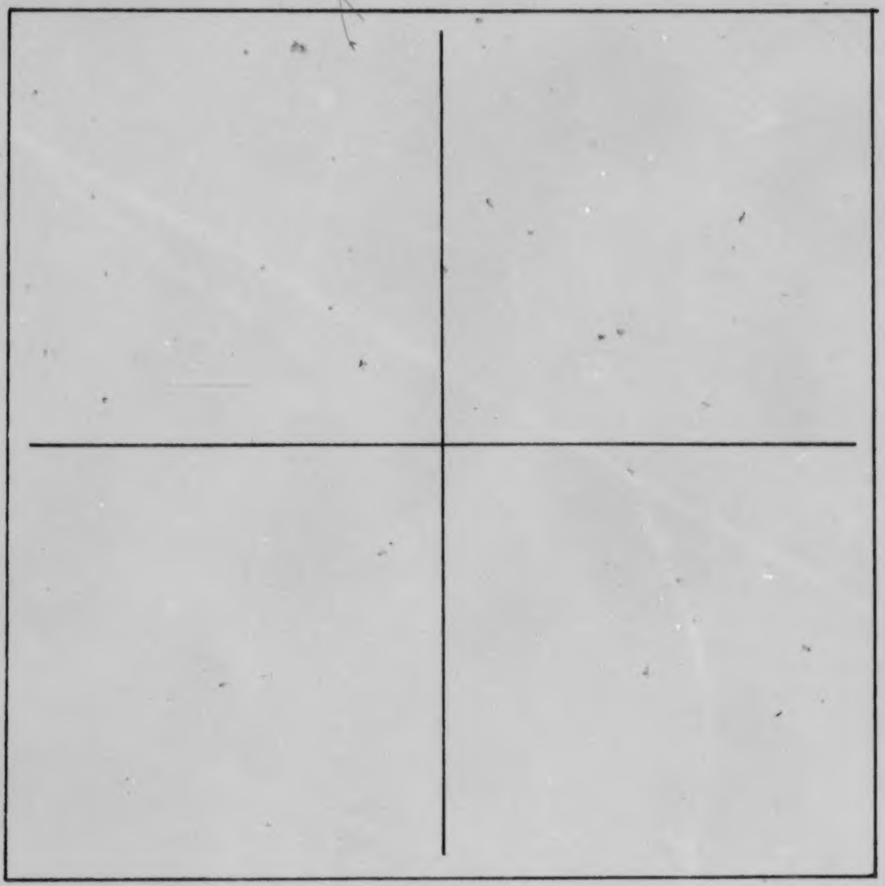
1. active - relative
2. valor - brave
3. fault - right

OUTDOOR ACTIVITY

Find the four-square play area. Measure the lines of the large square in meters. Record.

Measure the lines of the small squares in meters. Record.

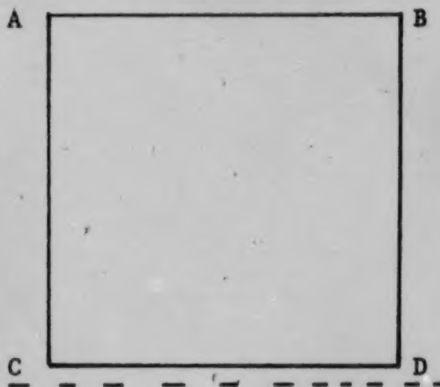
Compare.



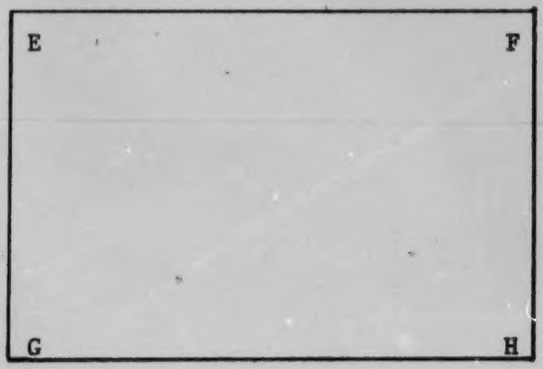
GEOMETRIC FIGURES

Study the different geometric figures and answer the questions that relate to the figure. Indicate whether that statement is true or false.

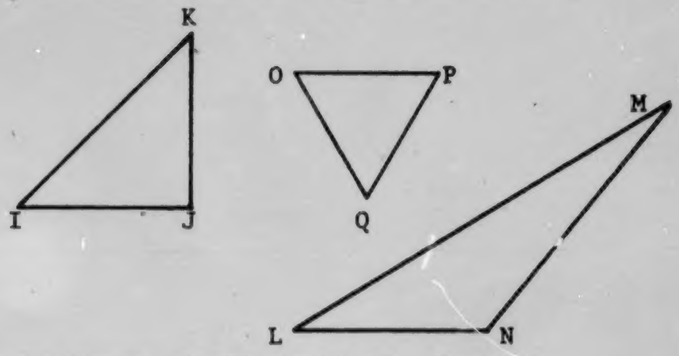
1. AB = 2 inches ____________________
2. AB = CD ____________________
3. The perimeter is 12 inches ________
4. The diameter is 4 inches ________



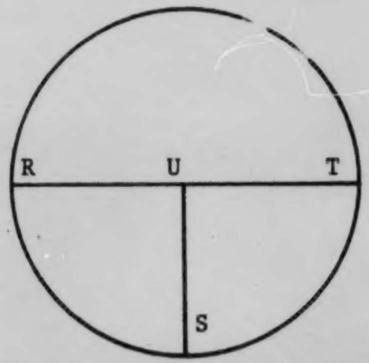
5. EG = EF ____________________
6. EG = 3 inches ____________________
7. EF = 3 inches ____________________
8. The perimeter is 10 inches ______



9. IJK is a right triangle ________
10. IJK is = to LMN ____________________
11. MNL is 90° ____________________
12. OPQ is 90° ____________________



13. Radius is 2 inches ____________
14. Diameter is 2 inches ____________
15. RU = UT ____________________
16. RT = US ____________________



WHICH ONE?

Which one of the sets of numbers below follows the rule that is given? Write true in the blank if the rule was followed; write false if it was not.

1. Divide by 3, add 5.

A. 12, 8, 15, 14, 11, 9 __________

B. 3, 9, 23, 18, 11, 8 __________

C. 10, 6, 19, 26, 14, 11 __________

2. Add 3, multiply by 2.

A. 6, 5, 8, 10, 13, 14, 32, 23 __________

B. 7, 9, 16, 20, 22, 18, 23, 27 __________

C. 10, 12, 14, 16, 18, 26, 22, 28 __________

3. A number squared, plus 1.

A. 17, 9, 4, 83, 24, 53, 12 __________

B. 82, 26, 10, 17, 37, 65, 5 __________

C. 16, 25, 50, 63, 81, 10, 17 __________

WHICH ONE DOESN'T BELONG?

In each series of numbers in the exercise below, you will find one number that doesn't belong. Circle the number that doesn't follow the pattern of the other numbers.

1. 2, 4, 6, 8, 9, 10

2. 2, 3, 6, 9, 12, 15

3. 3, 9, 18, 27, 36

4. 10, 20, 25, 30, 40

5. 7, 14, 21, 28, 34, 42

6. 9, 18, 27, 36, 47, 54

7. 6, 12, 16, 18, 24, 30

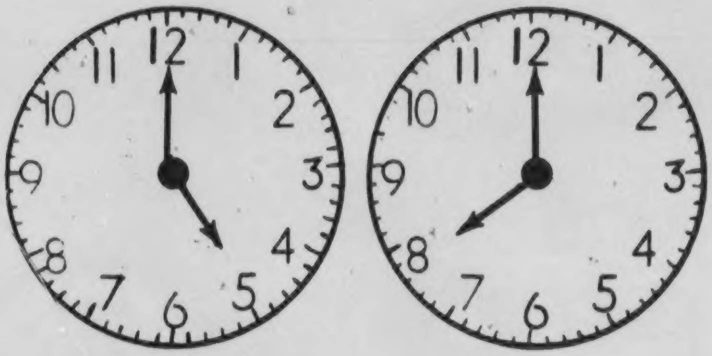
8. 12, 24, 36, 48, 62

9. 1, 3, 7, 13, 17, 18, 23

10. 4, 6, 9, 16, 25

TIME

Happy Birthday!

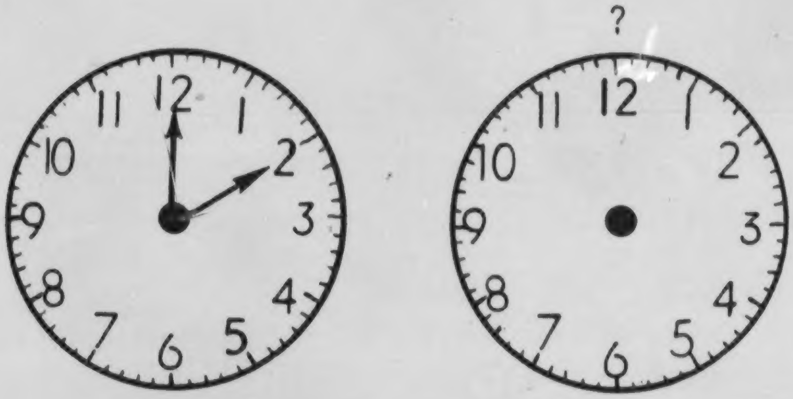


San Diego New York

Grandma's time in New York is 3 hours ahead of yours in San Diego.

Grandma phoned you to wish you a Happy Birthday.

It is Grandma's Birthday! Call Grandma and wish her a Happy Birthday. What time it is in New York?



San Diego New York

EST-1

WORDS FROM WORDS

What words could be made from the given word. Write Yes beside the words that could be made from letters in the word, and No beside those that could not.

1. disk

a. kids ____________

b. slid ____________

c. skid ____________

d. hide ____________

2. there

a. here ____________

b. three ____________

c. their ____________

d. error ____________

3. scold

a. scale ____________

b. cold ____________

c. clods ____________

d. load ____________

4. deal

a. lead ____________

b. dale ____________

c. dead ____________

d. head ____________

5. glare

a. large ____________

b. flare ____________

c. garage ____________

d. range ____________

6. dare

a. earn ____________

b. dear ____________

c. read ____________

d. hare ____________

7. tides

a. site ____________

b. diced ____________

c. edits ____________

d. diets ____________

8. detour

a. rousted ____________

b. routed ____________

c. toured ____________

d. detain ____________

WHAT'S IN ASTRONAUT?

Most of the words listed below were made from the letters found in the word ASTRONAUT. Some could not have been made since ASTRONAUT does not contain all the letters. Circle the words that *could not* have come from the word ASTRONAUT.

aunt

auto

rant

rattan

roast

rout

route

sauna

short

snort

sour

star

start

starve

stoat

stunt

taro

taunt

taut

toast

trot

trust

tuna

turn

undo

unto

ESI-1

WORDS FOR ABBREVIATIONS

How are abbreviations decided? For the following list of abbreviations identify and write the full word or words for the abbreviation. Underline the letters in the complete word that make up the abbreviation. Do you find a relationship between the abbreviation and the words? Is the relationship the same for all abbreviations?

1. adj. ____________________
2. adv. ____________________
3. def. ____________________
4. Fr. ____________________
5. Ger. ____________________
6. geog. ____________________
7. govt. ____________________
8. pl. ____________________
9. U.S. ____________________
10. Inc. ____________________
11. Corp. ____________________
12. Mr. ____________________
13. Mrs. ____________________
14. Dr. ____________________
15. st. ____________________
16. Prof. ____________________
17. etc. ____________________
18. blvd. ____________________
19. ave. ____________________
20. R.S.V.P. ____________________
21. N. ____________________
22. E. ____________________
23. W. ____________________
24. S. ____________________
25. Calif. ____________________
26. S.D. ____________________
27. Wash. D.C. ____________________
28. R.R. ____________________

ESI-2

STATES ABBREVIATIONS

Write the abbreviations of the states in the blanks to the left of the names. Then write the abbreviations in their proper places on the map on the next page.

AK
AL
AR
AZ
CA
CO
CT
DC
DE
FL
GA
HI
IA
ID
IL
IN
KS
KY
LA
MA
MD
ME
MI
MN
MO
MS
MT
NB
NC
ND
NH
NJ
NM
NV
NY
OH
OK
OR
PA
RI
SC
SD
TN
TX
UT
VA
VT
WA
WI
WV
WY

_____ Colorado
_____ Idaho
_____ Iowa
_____ Michigan
_____ Nebraska
_____ Arizona
_____ Illinois
_____ Kansas
_____ New Hampshire
_____ North Carolina
_____ Rhode Island
_____ Alabama
_____ Louisiana
_____ North Dakota
_____ California
_____ Pennsylvania
_____ Wyoming
_____ Hawaii
_____ Minnesota
_____ Ohio
_____ South Carolina
_____ Tennessee
_____ Missouri
_____ Virginia
_____ Washington
_____ South Dakota
_____ Mississippi
_____ Connecticut
_____ Massachusetts
_____ Nevada
_____ Delaware
_____ Indiana
_____ Kentucky
_____ New Mexico
_____ New York
_____ District of Columbia
_____ Maryland
_____ Alaska
_____ Florida
_____ Arkansas
_____ New Jersey
_____ Oklahoma
_____ Vermont
_____ Maine
_____ West Virginia
_____ Texas
_____ Montana
_____ Utah
_____ Oregon
_____ Georgia
_____ Wisconsin

514

ESI-2
(Cont.)

SHORTENED SPELLINGS

Which of the words would the shortened spelling best fit. Circle the word which you think would most likely be associated with the abbreviation.

1. Boldr

Boulder
Boulle
Bouillon

2. Chalir

Chevalier
Cheviot
Chevron

3. Defme

Defame
Default
Defect

4. Enrge

Encourage
Encrust
Encumber

5. Hytts

Hymenoptera
Hyonettees
Hymnist

6. Lnguge

Language
Languor
Laniferous

7. Odus

Odontology
Odorimeter
Odorous

8. Rect

Receipt
Reception
Recession

9. Bambo

Balustrade
Bamboo
Bandanna

10. Consid

Consider
Consigno
Consistent

CHOICES AND DESCRIPTIONS

Which of the four choices best fits the description? Underline the word that you think *best* fits.

A. Soft and white

1. Vanilla ice cream
2. Ice cube
3. Pad of paper
4. Box of tissues

B. Round and blue

1. Orange
2. Telephone book
3. The sky
4. A ball

C. Green and slimey

1. Grass
2. A frog
3. A dollar bill
4. Limes

D. Yellow and scratchy

1. Vegetable brush
2. Flower
3. Lemon
4. Stick of butter

E. Cold and sweet

1. Ice cube
2. Snow
3. Ice cream cone
4. The ocean

F. Soft and round

1. Baseball
2. Nerf ball
3. Orange
4. Marble

G. Hard and clear

1. Brick wall
2. Cellophane wrap
3. Glass
4. Water

H. Hard and rough

1. Bark on a tree
2. Baseball
3. Whiskers
4. Cement

THE STRAY WORD

In the group of words below you will find a word that does not belong because it is different in one way or another. Cross out the word that doesn't fit with the rest of the word group.

A. sing, hum, whistle, shout

B. soft, feathery, harsh, billowy

C. peaceful, thunderous, serene, quiet

D. violin, cello, flute, base violin

E. horse, cow, sheep, buffalo

F. electricity, candle, whale oil, fire

G. Los Angeles, San Francisco, San Diego, California

H. cry, sad, excited, sorrow

I. shirt, glove, hat, suitcase

J. magazine, newspaper, book, television

K. Bach, Beethoven, Beatles, Brahms

L. elephant, giraffe, ostrich, rhinocerous

A BANK ROBBERY MYSTERY

Directions

The clues (below) may be duplicated and cut apart or written on separate pieces of paper.

Participants are seated in a circle. The leader passes out the clues, one or more clue to each person. The leader explains that each of the pieces of paper contains one clue to help solve a bank robbery. The group has to find out from the clues the person or persons who robbed the bank of $1,000,000.

The group may organize in any way desired. Anytime someone thinks s/he knows the answers and the group agrees on the guess, s/he may tell the leader. The leader checks whether the answer is correct. If incorrect, the leader will not tell why. It is the task of the group to find out this.

Rules for the Group

1. No one is to leave her/his seat.
2. No one is to pass her/his clues around or show them to anyone else.
3. All sharing of clues and ideas must be done verbally.

In processing the event, the following questions maybe asked:

1. What happened to the group?
2. Was a leader needed?
3. How was time lost in getting organized?
4. Were all members included in solving the problem?
5. Did anyone monopolize the discussion?
6. What problems arose when some people did not share their clues?
7. What could have been done to make the group work more effectively?

Clues

The robbery was discovered at 8:00 a.m. on Friday, November 12. The bank had closed at 5:00 p.m. the previous day.

Miss Margaret Ellington, a teller at the bank, discovered the robbery.

The vault of the bank had been blasted open by dynamite.

The president of the bank, Mr. Albert Greenbags, left before the robbery was discovered. He was arrested by authorities at Mexico City airport at noon on Friday, November 12.

The president of the bank had been having trouble with his wife, who spent all of his money. He had frequently talked of leaving her.

The front door of the bank had been opened with a key.

The only keys to the bank were held by the janitor and the president of the bank.

Miss Ellington often borrowed the president's key to open the bank early when she had extra work to do.

A strange hippie-type person had been hanging around the bank on Thursday, November 11, watching employees and customers.

A substantial amount of dynamite had been stolen from the Acme Construction Company on Wednesday, November 10.

An Acme employee, Howard Ellington, said that a hippie had been hanging around the construction company on Wednesday afternoon.

The hippie-type character, whose name was Dirsey Flowers and who had recently dropped out of Southwest Arkansas State Teachers College, was found by police in East Birdwatch, about 10 miles from the Minnesota border.

Dirsey Flowers was carrying $500 when police apprehended him and had thrown a package into the river as the police approached.

Anastasia Wallflower of East Birdwatch, Wisconsin, said that she had bought $500 worth of genuine Indian love beads from Dirsey Flowers for resale in her boutique in downtown East Birdwatch.

When police tried to locate the janitor of the bank, Ellwood Smith, he had apparently disappeared.

Miss Ellington stated that her brother Howard, when strolling to Taylor's Diner for coffee about 11:00 p.m. on Thursday, November 11, had seen Mr. Smith running from the bank.

Mr. Smith was found by the F.B.I. in Dogwalk, Georgia, on November 12 He had arrived there via Southern Airlines Flight 414 at 5:00 p.m. on the 11th.

The airline clerk confirmed the time of Smith's arrival.

Mr. Greenbags was the only person who had the key to the vault.

There were no planes out of Dogwalk between 4:00 p.m. and 7:00 a.m.

In addition to keeping payroll records, Mr. Ellington was in charge of the dynamite supplies of the Acme Construction Company.

Mr. Greenbag's half-brother, Arthur Nodough, had always been jealous of his brother.

Nodough appeared in Chicago on Monday, November 8, waving a lot of money.

Arthur Nodough always got drunk on Friday nights.

Arthur wanted to marry Camelia Smith.

Miss Ellington said that Smith had often flirted with her.

Mr. Smith's father, a gold prospector in Alaska, had died in September.

Mr. Greenbags waited in the terminal at O'Hare Field in Chicago for 16 hours because of engine trouble on the plane he was to take to Mexico City.

MURDER MYSTERY

Directions

Leader passes out the clues, one clue to each person. The leader explains that each of the pieces of paper contains one clue to help solve the murder mystery. The group has to find out from the clues: (a) the murderer, (b) the weapon, (c) the time of the murder, (d) the place of the murder, and (e) the motive for the murder. The group may organize in any way desired. Any time someone thinks s/he knows the answers and the group agrees on the guess, s/he may tell the leader. The leader checks whether all five answers are right. If part of the answers is incorrect, the leader will not tell which answers are wrong. It is the task of the group to find out.

Rules for the Group

1. No one is to leave her/his seat.
2. No one is to pass her/his clues around or show them to anyone else.
3. All sharing of clues and ideas must be done verbally.

In processing the event, the following questions may be asked:

1. What happened in the group?
2. Was a leader needed?
3. How was time lost in getting organized?
4. Were all members included in solving the problem?
5. Did anyone monopolize the discussion?
6. What problems arose when some people did not share their clues?
7. What could have been done to make the group work more effectively?

Clues

When the elevator man saw Mr. Kelley, Mr. Kelley was bleeding slightly, but did not seem too badly hurt.

The elevator man saw Mr. Kelley go to Mr. Scott's room at 12:25 a.m.

Mr. Kelley had been dead for one hour when his body was found, according to a medical expert working with the police.

The elevator man said that Miss Smith was in the lobby of the apartment building when he went off duty.

Miss Smith saw Mr. Kelley go to Mr. Jones' apartment building at 11:55 p.m.

Mr. Kelley's wife disappeared after the murder.

Police were unable to locate Mr. Scott after the murder.

When police tried to locate Mr. Jones after the murder, they discovered that he had disappeared.

Miss Smith often followed Mr. Kelley.

Mr. Jones told Mr. Kelley that he was going to kill him.

Miss Smith said that nobody left the apartment building between 12:25 a.m. and 12:45 a.m.

Mr. Kelley's blood stains were found in Mr. Scott's car.

Mr. Kelley's blood stains were found on the carpet in the hall outside Mr. Jones' apartment.

A knife with Mr. Kelley's blood on it was found in Miss Smith's yard.

The knife found in Miss Smith's yard had Mr. Scott's fingerprints on it.

Mr. Kelley had destroyed Mr. Jones' business by stealing all his customers.

The elevator man saw Mr. Kelley's wife go up to Mr. Scott's apartment at 11:30 p.m.

The elevator operator said that Mr. Kelley's wife frequently left the building with Mr. Scott.

Mr. Kelley's body was found in the park.

Mr. Kelley's body was found at 1:30 a.m.

The elevator man went off duty at 12:30 a.m.

It was obvious from the condition of Mr. Kelley's body that it had been dragged a long distance.

When he was discovered dead, Mr. Kelley had a bullet hole in his thigh and a knife wound in his back.

Mr. Jones shot an intruder in his apartment building at 12:00 midnight.

The elevator operator reported to police that he saw Mr. Kelley at 12:15 a.m.

The bullet taken from Mr. Kelley's thigh matched the gun owned by Mr. Jones.

Only one bullet had been fired from Mr. Jones' gun.

DECISION-MAKING FISH BOWL

Rationale

This is an exercise in group decision-making. We often have difficulty coming to consensus in groups. Some people do not like to compromise and feel that their judgment is always best. Others change their minds rapidly and can never seem to decide among the alternatives. They are easily swayed by others.

The purpose of this exercise is to help you become aware of how you make decisions in a group setting.

Instructions

1. Your group is to divide into two groups, A and B. The groups should be of equal size.
2. Group A is to reach consensus on Activity 1, Lost on the Moon, while group B observes the process. Consensus means that the prediction for each of the 15 survival items must be agreed upon by each group member before it becomes part of the group decision.
3. At the end of 10 minutes, group B is to stop A's activity, and share with them for five minutes their perceptions of the group's and individual's behavior in the decision-making process.
4. Then the groups are to reverse roles.
5. Repeat steps 1 through 4 until both groups have reached consensus.
6. Check your answers against NASA's answers.

Criteria for Observing the Decision-Making Process

1. Consensus is difficult to reach. Therefore, not every ranking meets with everyone's complete approval. However, does the group try to make each ranking one with which all group members can at least partially agree?
2. Do individual group members avoid emotional involvement and arguing for their own judgments? Do they approach the task on the basis of logic rather than defending their own choices based on conceivable slim evidence?
3. Do some group members avoid conflict by giving in or changing their minds?
4. Do some group members support decisions which they do not really agree with?
5. Does the group use "conflict-reducing" techniques such as majority vote, averaging, or trading to reach decisions?
6. Do the group members view differences of opinion as helpful rather than as a hindrance in decision-making?

Classroom Development

Break into groups of 12 to 16 members. Read instructions. Each group should have no more than eight members, either making the decision or observing. Provide each member with a copy of "Lost on the Moon."

Length of exercise: 60 minutes.

Assessment

What did you learn about the way you make decisions?

What did you learn about the way groups make decisions?

What can you do to improve your decision-making ability?

LOST ON THE MOON

Instructions

You are in a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot 200 miles from the rendezvous point. During reentry and landing, much of the equipment aboard was damaged, and since survival depends on reaching the mother ship, the most critical items available must be chosen for the 200-mile trip. Below are listed the 15 items left available and undamaged after landing. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important, and so on through number 15, the least important.

_____ Box of matches

_____ Food concentrate

_____ 50 feet of nylon rope

_____ Parachute silk

_____ Portable heating unit

_____ Two .45 calibre pistols

_____ One case dehydrated milk

_____ Two 100 lb. tanks of oxygen

_____ Stellar map (of the moon's constellation)

_____ Life raft

_____ Magnetic compass

_____ 5 gallons of water

_____ Signal flares

_____ First aid kit containing injection needles

_____ Solar-powered FM receiver-transmitter

SUMMARY SHEET
Concensus Game (NASA)

	1	2	3	4	5	6	7	8	9	Group Prediction	NASA
Box of matches											
Food concentrate											
50 feet of nylon rope											
Parachute silk											
Portable heating unit											
Two .45 calibre pistols											
One case dehydrated milk											
Two 100 lb. tanks of ozygen											
Stellar map (of moon's constellation)											
Life raft											
Magnetic compass											
5 gallons of water											
Signal flares											
First aid kit containing injection needles											
Receiver-transmitter solar-powered FM											
SCORE											

Group Members' Names

1. ________________
2. ________________
3. ________________
4. ________________
5. ________________
6. ________________
7. ________________
8. ________________

Decision-Making Guidelines

1. Does the group try to make each ranking one with which all group members can at least partially agree?
2. Do individual group members avoid emotional involvement and arguing for their own judgment?
3. Do some group members base their reasons on logic rather than defending their choices based on their own emotions or a small amount of evidence?
4. Do some group members support decisions with which they do not really agree?
5. Does the group reduce conflict by using majority voting, averaging, or trading to reach decisions?
6. Do the group members consider differences of opinions as helpful rather than as a hindrance in decision-making?

Learning Opportunities

When each group has selected its choices have the leaders report on the following:

A. Could they get consensus from their group?
    1. If so how did they get it?
    2. If not what were some of the difficulties?

B. Did each group member have an opportunity to state the reasons for his/her opinions?
    1. How did the other members of the group react?
    2. Did this help or hinder the decision-making?

C. Were members of your group willing to concede on some of their opinions? Did members of the group stick to their opinion just to win the argument?

D. What are some of the problems of group decision-making? What are some of the benefits? How can we make group decision-making more effective?

MIXED-UP SENTENCES

Read the sentences carefully. Cross out the sentences which do not make sense.

1. Jane tore her new dress so her mother took it to the dentist.
2. Matthew, who is seven, had his fifth birthday last year.
3. Margaret and Jim will go to Europe this summer.
4. In 1902 some scientists dug up the remains of a car which they were sure had been a Mustang.
5. Mrs. North burned her cake so she put it back into the mixing bowl so she could try again.
6. Mother liked to shop on Fridays because there were fewer people in the store.
7. Allison knocked the vase down and broke it, so she filled it up with water again so no one would know.
8. Billy went to the market for the lady next door so she gave him fifty cents.
9. Sue liked her new bike so she slid down the hill on it.
10. Mary liked to read so she checked some books out of the library.

BRAIN TEASERS

Hospital Plan

Indicate in what way the following plan is faulty: A particular hospital wants to rotate its employees so that each one will have a turn on night duty. Mary Jo is told that each Thursday she is to change shifts, but she will continue to have Sunday off. She is to change from the day shift (8:00 a.m. to 4:00 p.m.) to the evening shift (4:00 p.m. to midnight). The following week she is to work the early morning shift (midnight to 8:00 a.m.).

Three Posers

Play detective and see if you can solve this puzzle: A man who was served a cup of coffee in a restaurant called the waiter back to the table. Pointing to the cup, he said, "There seems to be a fly in my coffee. Please take this cup away and bring me a fresh cup of coffee."

The waiter promptly apologized, picked up the cup of coffee and took it away. He returned with a cup of coffee that had no fly in it. But when the customer tasted the coffee, he declared, "This is the same cup of coffee I had before!"

How did he know?

* * * * *

A medieval magician, carrying a bottle of liquid, approached the throne of his king.

"Sire," the magician said to the monarch, "I have here a most magic liquid. Such is its power that it will dissolve anything it touches."

"Anything?" asked the king.

"Anything!" replied the magician.

But the king knew that the magician was mistaken. How did he know?

* * * * *

A cannon ball is dropped from the top of a tower 250 feet high. At the same instant, another cannon ball of the same size and weight is fired horizontally (straight out) from a cannon.

Which cannon ball will reach the ground first?

Clean and Dirty

Two white workmen were repairing a roof. They fell through a large chimney and landed in a fireplace on the floor below.

Both men arose unhurt. They looked at each other, walked around the room, stretched their arms and realized that they had sustained no injuries. Without speaking a word or discussing their sudden fall, both men started back to the job.

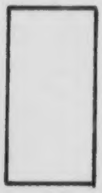
Now it happened that one man's face was well smeared with soot from his passage through the chimney. The other man's face, however, was absolutely clean. Yet the man with the clean face washed his face; the man with the dirty face went back to work without washing his face!

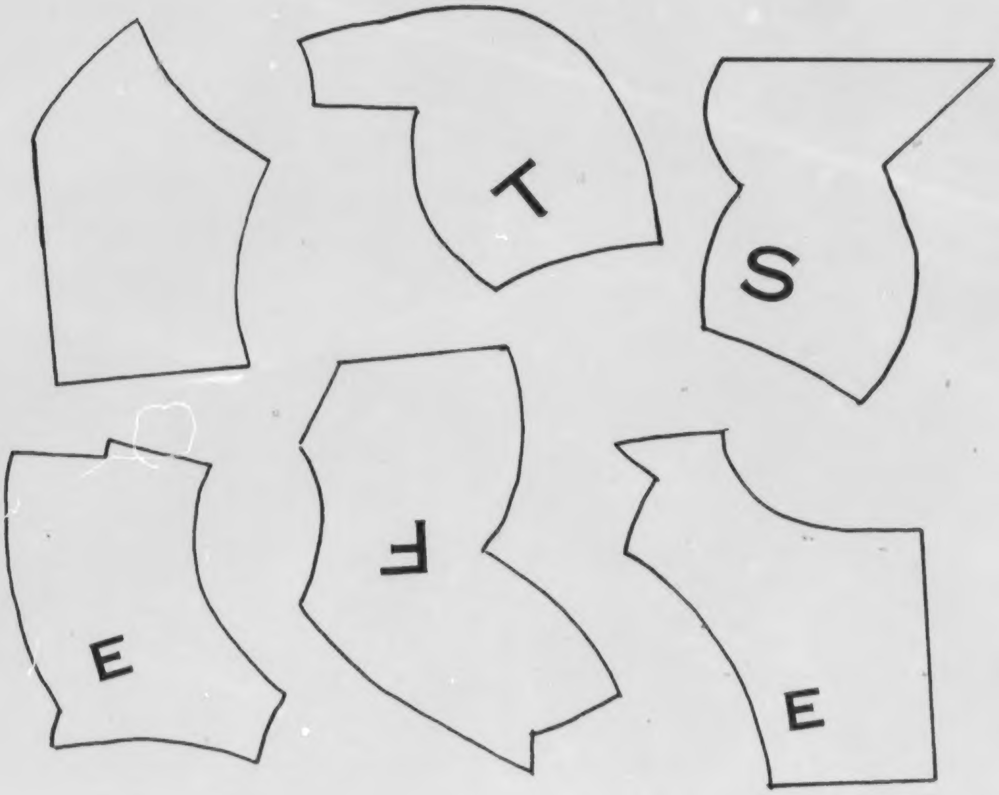
Can you explain, logically, why they did this?

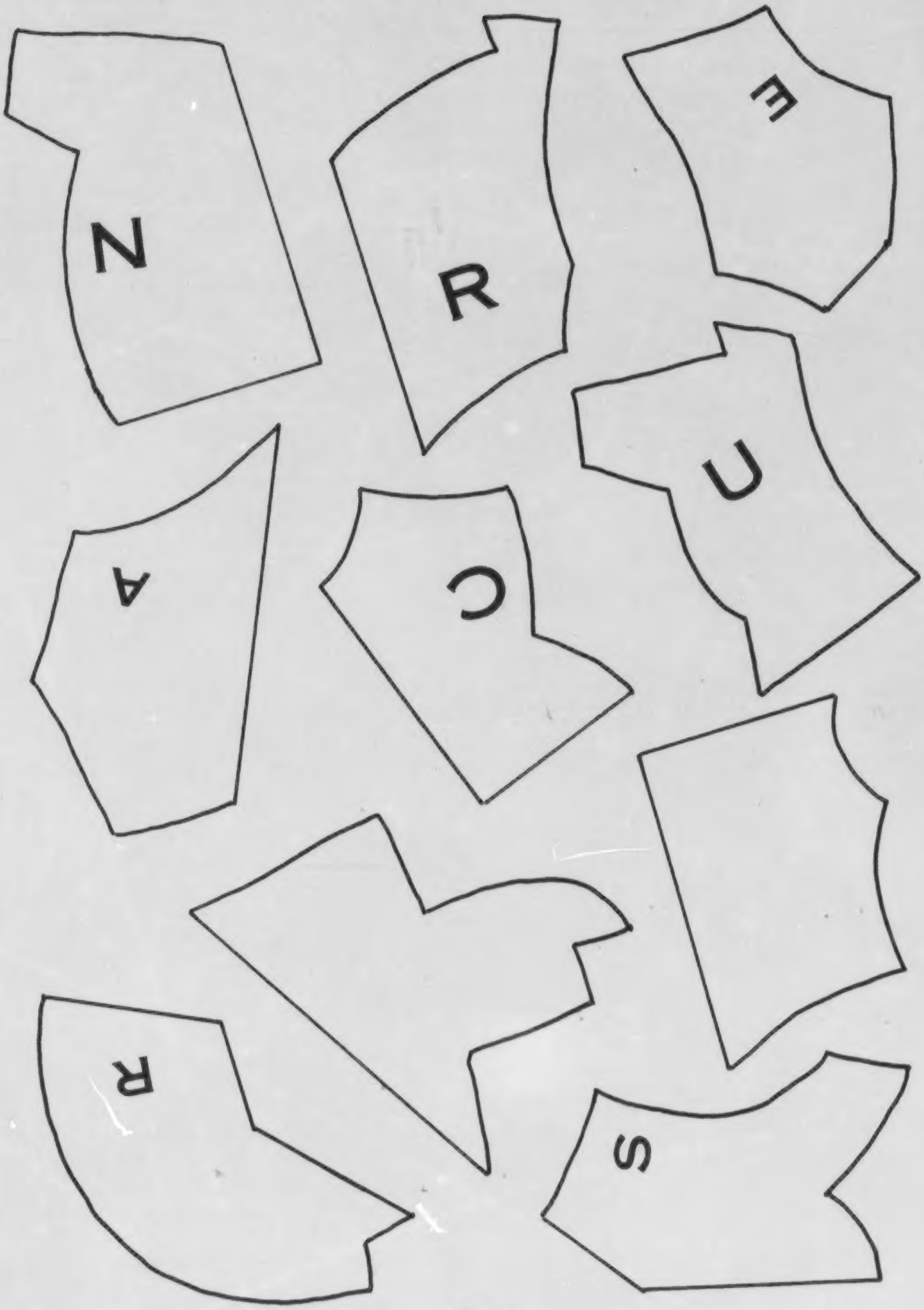
SECRET MESSAGE

There's a secret message on the pieces of paper on these two pages. Cut out the pieces, fit them together, and you will learn what that message is.

The shape formed when all the pieces are put together will be like this:



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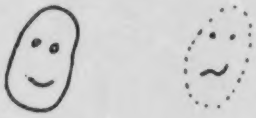
CREATIVE WRITING ACTIVITIES

To make a comparison, two things must be compared. For instance, if you say, "The sea is shiny," that is not a comparison because "shiny" is not a thing. However, if you say, "The sea shines like a mirror" you have compared a mirror to the sea.

In this exercise use comparisons to describe ZERO.

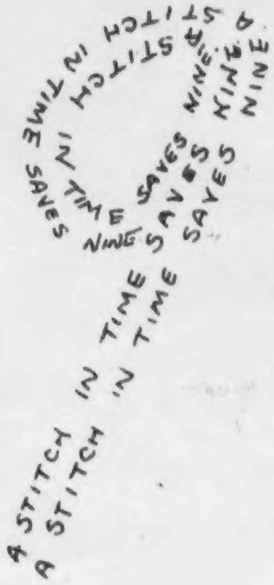


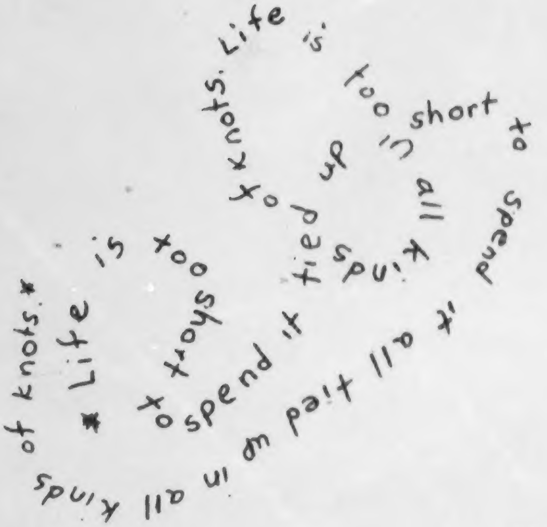
What things in a hardware store look like *zero*?

TRY Concrete Poetry

Directions

1. Choose an old adage, proverb, or well-known saying.
2. Try to make the meaning of the saying into a shape that reflects its meaning.
3. The use of line and structure is important: If your saying concerns confusion, make the shape look confusing!


A STITCH IN TIME SAVES NINE
A STITCH IN TIME SAVES NINE
A STITCH IN TIME SAVES NINE


* Life is too short to spend it all tied up in all kinds of knots. *
Life is too short to spend it tied up in all kinds of knots.

COMPARISONS

Which Weighs More?

A SCREAM? A BAG OF POTATOES?

Why?

Which is Faster?

A TABLE A CHAIR

Why?

TAKE YOUR ORDER

How strongly do you feel about:

1. A company that continues to pollute the environment after being fined?
2. Sports being the way to encourage good sportsmanship and fairness?
3. The person who wears unusual clothes?
4. Having a dress code at school?
5. A person who cheats on his/her income tax?
6. Eating lunch in the school cafeteria?
7. A person in a restaurant who blows cigarette smoke in your face while you are eating?
8. The person who copies someone else's paper?
9. A person who uses "fear" and lectures to influence the behavior of other people?
10. Watching television more than three hours a day?
11. Selecting your own dinner when you eat out?
12. The person who always talks about ecology and throws trash out of the car?
13. The young person who uses dangerous drugs?
14. The person who is most qualified for an office actually winning the election?
15. The rationing of gasoline?
16. The person who uses too much alcohol?

Rank these on your opinion checklist (next page) by putting one item in each square. Meet with your group and agree upon the top *four* items. Discuss why these items are the top four.

Group Members' Names:

____
____
____
____
____

Couldn't Care Less	Mild Opinion	Strong Opinion	Very Strong Opinion
13	9	5	1
14	10	6	2
15	11	7	3
16	12	8	4

EMI-2

YOU!!

Name ______________________________

Think about yourself in three parts. Think of *facts*, *actions*, and *feelings*. Make a word collage to tell about yourself.

FACTS: (Name, address, hair color, eyes, height, weight, phone number, shoe size, clothing size, etc.)

ACTIONS: (Things I do: school, read, baseball, music, dance, chores, tennis, eat, etc.)

FEELINGS: (Ways I feel: sad, happy, bored, etc.)

EMI-3

ABOUT ME!!

Read the sentences and circle Yes or No or Sometimes.

1. I like people. Yes No Sometimes
2. I like to be on time. Yes No Sometimes
3. I like to play ball. Yes No Sometimes
4. I am honest. Yes No Sometimes
5. I want to be a leader. Yes No Sometimes
6. I believe in playing fairly. Yes No Sometimes
7. I like to go to school. Yes No Sometimes
8. I like to work alone. Yes No Sometimes
9. People like me. Yes No Sometimes
10. I am moody. Yes No Sometimes
11. I usually finish work on time. Yes No Sometimes
12. I have a hobby. Yes No Sometimes
13. I get mad. Yes No Sometimes
14. I help with jobs at home. Yes No Sometimes
15. I like to do jobs at school. Yes No Sometimes
16. I help others. Yes No Sometimes

EMI-4

A NEW ISLAND!!

A new island has been formed in the middle of the Pacific Ocean. You have been named governor of the new island. You must select two people to help you organize the new land. You must:

1. Name it.
2. Tell what jobs are necessary in order for people to live there.
3. Decide where the cities will be.
4. Decide how the citizens will earn a living.

The decision is yours. There are no right or wrong answers. Write your ideas on paper. Draw a map of the island. Show the name of the island, its location, and the names of at least two cities.

BEST FRIEND

Write a description of your best friend and tell why you like him/her.

EMI-6

CHECKLIST FOR THE CREATIVE PERSON

After each item put the words "Have" or "Have not" for each week.

Elements of Creativity	First Week	Second Week	Third Week	Fourth Week
1. Desire - wanting to make things better, hoping to improve what is already good.				
2. Alertness - being alive, awake to notice everything that happens to you and around you.				
3. Interest - wanting to dig beneath the surface of what goes on.				
4. Curiosity - thinking of and asking questions on all sections of a problem or situation.				
5. Thoughtfulness - seeing all the parts of a problem and giving considerate thought to understanding exactly what it is.				
6. Concentration - being able to focus your interest and thought and *keep* it focused so that you can think about and understand things in depth.				
7. Application - putting forth the effort, using energy and hard work constantly.				
8. Patience - being able to keep coming back to a problem time after time, until you're completely satisfied with the solution.				
9. Optimism - having self-confidence and enthusiasm.				
10. Cooperation - being willing to share your ideas with others and to help develop them. Considering the reactions of others and their suggestions.				

WHAT WOULD YOU THINK?

What would you think if you found a turtle in your bathtub? Write a story about it. Draw a picture

A MIXED-UP WORLD

What would happen if every flower in the world were yellow. Write a story about it.

A MIXED-UP WORLD

What could happen if carrots tasted like candy? Write a story about this. Draw a picture.

A MIXED-UP WORLD

What could happen if all the shoes in the world were the same size? Write a story and draw a picture.

A MIXED-UP WORLD

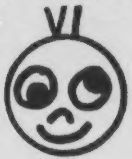
What could happen if cows have manes like lions do? Write a story and draw a picture.

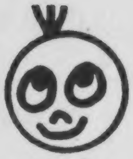
WHAT WOULD YOU THINK?

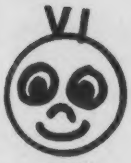
What would you think if all the lights went out everytime you turned on the water? Write a story about what happened. Draw a picture.

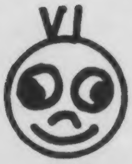
ANSWERS

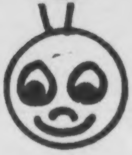
EFU-1 CROSS-OUTS

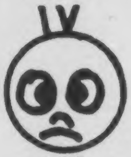
1. 

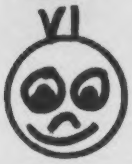
2. 

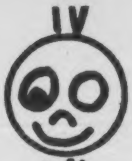
3. 

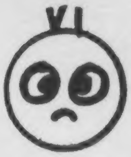
4. 

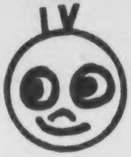
5. 

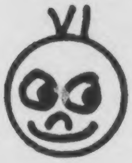
6. 

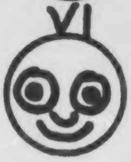
7. 

8. 

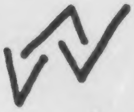
9. 

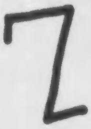
10. 

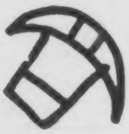
11. 

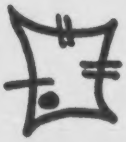
12. 

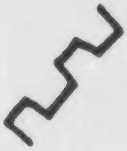
EFU-2 FINDING SIMILARITIES

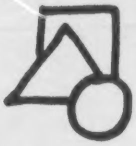
1. 

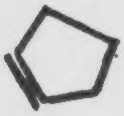
2. 

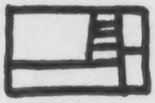
3. 

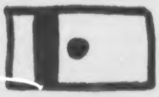
4. 

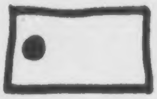
5. 

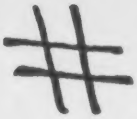
6. 

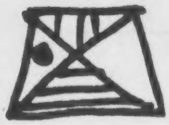
7. 

8. 

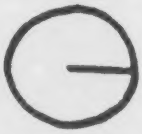
9. 

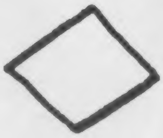
10. 

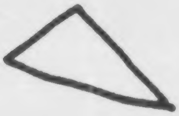
11. 

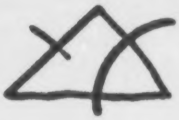
12. 

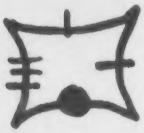
EFT-1 MATCHING FIGURES

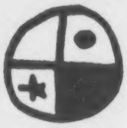
1. 

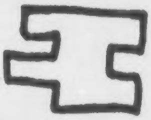
2. 

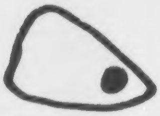
3. 

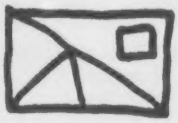
4. 

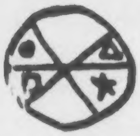
5. 

6. 

7. 

8. 

9. 

10. 

EFR-1 MEASUREMENT (SIMPLE)

1. A
2. E
3. B
4. D
5. B and D
6. C and E

EFR-1 MEASUREMENT (COMPLEX)

1. A
2. C and D or B and E
3. Yes
4. Yes
5. No
6. No
7. No
8. H
9. B
10. A, B

ESU-5 FIND THE LETTERS

X	L	U	V	M	X	L	P	M	V
U	V	M	L	X	P	U	M	X	L
M	X	U	V	X	M	L	P	V	U
X	L	M	U	V	X	P	X	L	V
U	V	M	U	V	M	X	L	P	M
V	X	L	V	M	X	L	P	U	X
M	V	X	U	V	M	P	X	L	L
X	U	L	M	D	U	M	X	L	P
L	U	V	X	X	L	X	V	U	M
P	L	U	V	M	X	L	P	L	P

ESU-7 SAME OR DIFFERENT? (SIMPLE)

1. D
2. D
3. D
4. S
5. D
6. S
7. D
8. D
9. D
10. S
11. D
12. D
13. D
14. S
15. D
16. D
17. S
18. D
19. D
20. S

ESU-8 SAME OR DIFFERENT (COMPLEX)

1. D
2. D
3. S
4. D
5. S
6. D
7. S
8. D
9. D
10. D
11. D
12. D
13. D
14. D
15. D

ESU-9 FIND THE WORDS

1. session, histone
2. pastor, roost, cloth
3. city, mood, tidy (Not idiom since given word does not have two i's.)
4. clean, enamel, hence
5. start, unto, aunt
6. push, rebus

ESC-1 VOWEL-CONSONANT ARRANGEMENT

Double Vowel	V-C-V	C-V-C	Double Consonant
soon	gasoline	pilot	happen
pioneer	apart	person	collect
free	care	force	different
certain	pretend	king	
learn	honest	silence	
		purple	
		joke	

ESC-2 CLASSIFICATION BY MULTIPLES

Multiples of 2

2, 4, 6, 8, 10,
12, 14, 16, 18,
20, 22, 24, 26,
28, 30, 32, 34,
36, 38, 40, 42,
44, 46, 48, 50,
52, 54, 56, 58,
60, 62, 64, 66,
68, 70, 72, 74,
76, 78, 80, 82,
84, 86, 88, 90,
92, 94, 96, 98,
100

Multiples of 3

3, 6, 9, 12, 15,
18, 21, 24, 27,
30, 33, 36, 39,
42, 45, 48, 51,
54, 57, 60, 63,
66, 69, 72, 75,
78, 81, 84, 87,
90, 93, 96, 99

Multiples of 4

4, 8, 12, 16, 20,
24, 28, 32, 36,
40, 44, 48, 52,
56, 60, 64, 68,
72, 76, 80, 84,
88, 92, 96, 100

Multiples of 3 and 6

6, 12, 18, 24,
30, 36, 42, 48,
54, 60, 66, 72,
78, 84, 90, 96

Multiples of 5 and 10

10, 20, 30, 40,
50, 60, 70, 80,
90, 100

Primes

1, 3, 7, 11, 13,
17, 19, 23, 31,
37, 41, 43, 47,
49, 53, 61, 67
73, 79, 81, 83
89, 91, 97

ESC-3 CROSS OUT WORDS

1. cloth
2. bland
3. lose
4. some
5. cable
6. hallow
7. loot
8. knock
9. kink
10. store
11. quiet

12 tomb

ESC-4 A WORD PUZZLE

1. bake
2. quake
3. stake
4. take
5. flake
6. mistake
7. capture
8. mixture
9. immature
10. literature
11. signature
12. posture

ESR-1 WORD PAIRS

A. 3
B. 3
C. 1
D. 2
E. 3
F. 2
G. 1
H. 3
I. 3
J. 1

ESR-2 FAMILY PICNIC

1. 3
2. 3
3. 3
4. hot dogs

ESR-3 LETTER RELATIONSHIPS

A. 3
B. 1
C. 3
D. 3
E. 3
F. 3
G. 1
H. 1

ESR-5 GEOMETRIC FIGURES

1. True
2. True
3. False
4. False
5. False
6. False
7. False
8. True
9. True
10. False
11. False
12. False
13. False
14. True
15. True
16. False

ESS-1 WHICH ONE?

	1.	2.	3.
A.	T	F	F
B.	F	F	T
C.	F	T	F

ESS-2 WHICH ONE DOESN'T BELONG?

1.	9	2.	2
3.	3	4.	25
5.	34	6.	47
7.	16	8.	62
9.	18	10.	6

EST-1 WORDS FROM WORDS

1.	a.	Yes	2.	a.	Yes	3.	a.	No
	b.	No		b.	Yes		b.	Yes
	c.	Yes		c.	No		c.	Yes
	d.	No		d.	No		d.	No
4.	a.	Yes	5.	a.	Yes	6.	a.	No
	b.	Yes		b.	No		b.	Yes
	c.	No		c.	No		c.	Yes
	d.	No		d.	No		d.	No
7.	a.	Yes	8.	a.	No			
	b.	No		b.	Yes			
	c.	Yes		c.	Yes			
	d.	Yes		d.	No			

EST-2 WHAT'S IN ASTRONAUT?

route, starve, short, trouble, undo

ESI-1 WORDS FOR ABBREVIATIONS

1.	adj.	adjective	15.	st.	street
2.	adv.	adverb	16.	Prof.	Professor
3.	def.	definition	17.	etc.	et cetera
4.	Fr.	France	18.	blvd.	boulevard
5.	Ger.	Germany	19.	ave.	avenue
6.	geog.	geography	20.	R.S.V.P.	répondez s'il vous plait
7.	govt.	government	21.	N.	north
8.	pl.	plural	22.	E.	east
9.	U.S.	United States	23.	W.	west
10.	Inc.	Incorporated	24.	S.	south
11.	Corp.	Corporation	25.	Calif.	California
12.	Mr.	Mister	26.	S.D.	San Diego
13.	Mrs.	Mistress	27.	Wash. D.C.	Washington, District of Columbia
14.	Dr.	Doctor or Drive	28.	R.R.	Rural route or railroad

ESL-3 SHORTENED SPELLINGS

1. Boulder
2. Chevalier
3. Defame
4. Encourage
5. Hyonettees
6. Language
7. Odorous
8. Receipt
9. Bamboo
10. Consider

EMU CHOICES AND DESCRIPTIONS

A. Box of tissue
B. A ball
C. A frog
D. Vegetable brush
E. Ice cream cone
F. Nerf ball
G. Glass
H. Bark on a tree

EMC THE STRAY WORD

A. shout
B. harsh
C. thunderous
D. flute
E. buffalo
F. electricity
G. California
H. excited
I. suitcase
J. television
K. Beatles
L. ostrich

EMR-1 A BANK ROBBERY MYSTERY

The Ellingtons collaborated to rob the bank, Miss Ellington supplying the front door key (borrowed from Mr. Greenbags) and Howard supplying the dynamite. Greenbags had already left for Brazil when the robbery took place. Mr. Smith was in Dogwalk on the night of the robbery. Dirsey Flowers was at the home of Anastasia's parents. The Ellingtons were lying when they tried to implicate Smith. There was no evidence that Arthur Nodough was connected with the robbery in anyway.

EMR-2 MURDER MYSTERY

After receiving a superficial gunshot wound from Mr. Jones, Mr. Kelley went to Mr. Scott's apartment where he was killed by Mr. Scott with a knife at 12:30 a.m. because Mr. Scott was in love with Mr. Kelley's wife.

EMS-2 BRAIN TEASERS

Hospital Plan: This plan is faulty because the second week Mary Jo would have no opportunity to sleep since she would have to work the day shift on Friday.

Poser No. 1: The man knew it was the same cup of coffee because he had put sugar in the coffee before he found the fly in it.

Poser No. 2: The king knew the magician was mistaken, because if the liquid dissolved everything it touched, it would dissolve the bottle, too.

Poser No. 3: Both cannon balls will reach the ground at the same time. Gravity acts on each one in the same way, so each one will approach the ground at the same rate.

EMS-2 BRAIN TEASERS (Cont.)

Clean and Dirty: The workmen looked at each other. The first man saw that the other's face was dirty, hence he assumed that his own was dirty also. The man with the dirty face saw the clean face of his companion and supposed that his own was clean. Thus the man with the clean face washed and the man with the dirty face did not.

EMR-3 DECISION-MAKING FISH BOWL

Answers:

Boxes of matches	15
Food concentrate	4
50 ft. nylon rope	6
Parachute silk	8
Portable heater unit	13
Two .45 calibre pistols	11
One case dehydrated milk	12
Two 100 lb. tanks oxygen	1
Stellar map (moon version)	3
Life raft	9
Magnetic compasses	14
Five gallons of water	2
Signal flares	10
First-aid kit with needles	7
Solar-powered radio	5

Answers in order:

1	Two 100-lb. tanks of oxygen
2	Five gallons of water
3	Stellar map
4	Food concentrate
5	Solar-powered FM transceiver
6	Fifty feet of nylon rope
7	First-aid kit with injection needles
8	Parachute silk
9	Life raft
10	Signal flares
11	Two .45 calibre pistols
12	One case dehydrated milk
13	Portable heating unit
14	Magnetic compass
15	Boxes of matches

Scoring

Subtract your ranking number for each item from NASA's ranking number. Add these differences. Also do this for the ranking list and compare individual prediction with the group prediction.

Example:	Your Ranking	NASA's	Difference
Box of matches	8	15	7
Signal flares	14	10	4

Explanation

These are the answers supplied by the NASA scientists. The answers are split into groups, physical survival and traveling to the rendezvous.

The first two items are air and water without which you cannot survive at all. After that comes the map for locating position and figuring out how to get to the rendezvous. Food comes next for strength on the trip. It is not as necessary for survival as air and water.

The FM transceiver is for keeping in touch with earth. In a vacuum, without an ionosphere, radio transmission travels only in line of sight and would be limited on the moon to destinations of approximately ten miles. On earth powerful receivers could pick up messages which would then be relayed to the mother ship. The next item would be rope for lunar mountain climbing and traversing crevasses on the trip. The next item would be first aid for injuries. Parachute silk would offer excellent protection from sunlight and heat buildup.

The life raft is a carryall for supplies (the moon's gravity permits heavy loads to be carried), as a shelter, and a possible stretcher for the injured. It also offers protection from micro-meteorite showers.

Flares cannot burn in a vacuum but they, as well as the pistols, can be shot. Flares and guns would therefore be excellent propulsive devices for flying over obstructions. The milk is heavy and relatively less valuable.

On the moon overheating is a problem and not cold. Thus the heating unit is useless.

The magnetic compass is useless without a map of the moon's fields. The box of matches is obviously the most useless item.

Evaluation Task Cards

Task cards created for use with the evaluation factor are presented on the following pages. Answers are presented at the end of the section.

The task cards have also been printed on a heavier stock and sets (Stock No. 41-S-9941) may be ordered through the Office of Materials Development, 293-8140.

E
Task Card 1

DRAW A CARTOON

Draw a cartoon showing what the sentences *say*. Write the cliché under the cartoon.

1. Lend me your ears.
2. He yelled his head off.
3. He always puts his foot in his mouth.
4. She worked like a dog.
5. He was so surprised his eyes popped out.
6. Keep an eye on the baby.
7. It's raining cats and dogs.
8. He's more fun than a barrel of monkeys.
9. He let the cat out of the bag.
10. He's growing like a weed.
11. She's as pretty as a picture.
12. He's as busy as a bee.
13. They caught him red-handed.
14. She's stretching the truth a little.
15. He's sharp as a tack.

Task Card 2

WORD GROUPS

Each person should number 1 to 10 on paper. The first to write all the words that belong to each group wins.

1. orange, purple, red
2. milk, eggs, flour
3. one, four, six
4. run, hop, jump
5. bed, chair, rug
6. doll, horn, ball
7. pig, cow, pony
8. baby, mother, girl
9. elephant, lion, bear
10. bus, car, train

airplane
lamp
monkey
green
boy
butter
two
skip
balloon
horse

SCRAMBLED SENTENCES

Try to unscramble the sentences below. Then write them correctly on paper.

1. smelled the flower good blue
2. can't shoes I my tie
3. smiling astronauts four were the
4. head the shook lion his
5. rowed river man the the down
6. good eggs eat to are scrambled
7. the the around ran piano boy
8. alike twins the very look much
9. hurt man still but alive the is was

E
Task Card 4

ROOT WORDS

Find the root word in each word. Write it on paper. The first one to finish the list wins.

1. boxes
2. glasses
3. goes
4. running
5. eaten
6. cooler
7. warmer
8. restless
9. witches
10. loaded
11. looked
12. jumping
13. walking
14. bushes
15. waiting
16. sunny
17. dresses
18. frogs
19. singer
20. friendly
21. crying
22. helpful
23. baker
24. needed
25. longer
26. decided
27. biggest
28. longest
29. answered
30. runs
31. ears
32. wanted
33. cutting
34. throwing
35. playing
36. baked
37. sadness
38. dolls
39. laughed
40. taller

E
Task Card 5

RHYMING WORDS

Write these four words on paper at the top of four columns.

then day sell thing

Write the words below under the word they rhyme with.

1. hay
2. well
3. when
4. string
5. pen
6. den
7. say
8. fell
9. spell
10. bay
11. hen
12. ring
13. stay
14. ten
15. king
16. bring
17. shell
18. wing
19. bell
20. play
21. tell
22. clay
23. men
24. spring

E
Task Card 6

ILLUSTRATING WORDS

Choose a word from the list below. Make a picture or a collage to illustrate the word. Use small pictures from magazines, words from newspapers and magazines, materials from the Found Box, and drawings. Put the word you choose on the back. See if others can guess the word you picked. Later a story can be made to go with the mood picture.

1. happy
2. angry
3. afraid
4. freezing
5. embarrassed
6. shy
7. sad
8. friendly
9. lazy
10. impatient
11. excited
12. sleepy
13. brave
14. warm
15. jealous

E
Task Card 7

JUST SUPPOSE

Choose a "just suppose" question. Write or draw what you think might happen.

1. What would happen if our shadows became real?
2. What do you suppose would happen if there were no night?
3. What do you suppose would happen if one morning there were no gravity?
4. What do you suppose would happen if you could become invisible?
5. What do you suppose would happen if a spaceship from another planet landed on the patio of your home?
6. What would happen if the wind never blew?
7. What would happen if the sun suddenly cooled off?
8. What do you suppose would happen if everybody stopped working?
9. What do you suppose would happen if everyone loved everyone else?

LAST ONE WINS

Here's a game for two people and 20 checkers. The checkers are on a table. The players take turns picking up the checkers. Each player must pick up 1 or 2 or 3 checkers each time. The player who picks up the last checker wins.

Here's how to win: Let the other player go first. This is polite and, pleasantly enough, it will also help you win. You must pick up:

The 4th checker

The 8th checker

The 12th checker

The 16th checker

And the 20th checker, which wins!

How does it work?

When the other player picks up 1, you pick up 3.

When s/he picks up 2, you pick up 2.

When s/he picks up 3, you pick up 1.

If the other player begins to catch on to how you are winning, change the number of checkers in the game to 30.

E
Task Card 9

WHAT WOULD YOU DO IF. . . . .

Thinking about what you would do in each of the situations below may help you discover what you want and value. Write down three actions you would take if:

You were President of the United States.

You were given $1,000,000.

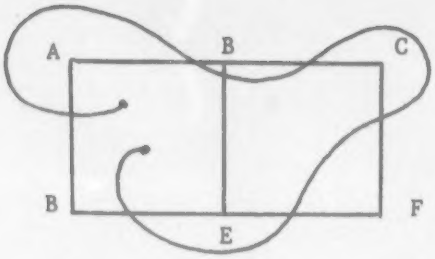
You could do anything you wanted for one month.

PET PEEVES

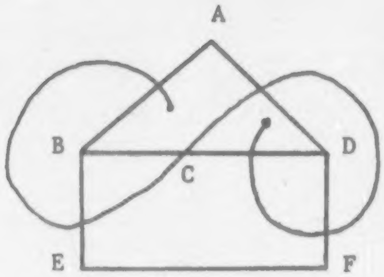
Everyone has "pet peeves." List your pet peeves. Now list all the ideas you can dream up for reducing these irritations.

DRAWING LINES

I

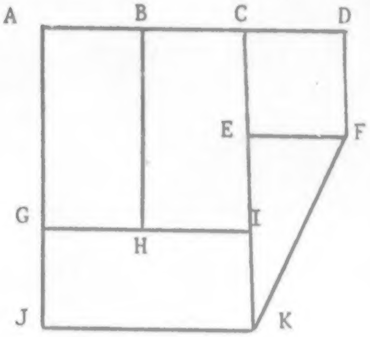


II



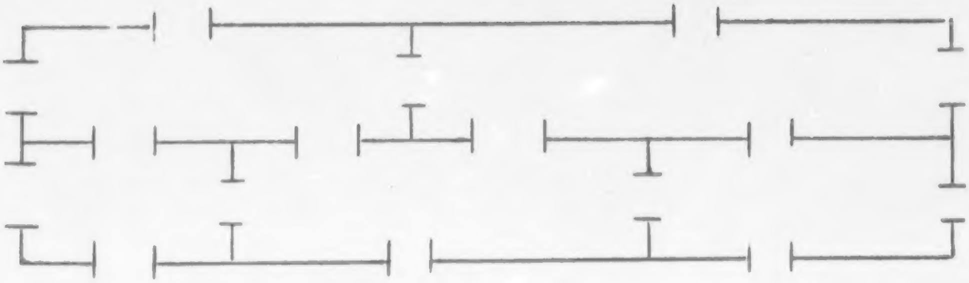
In I there is no difficulty in drawing a continuous line which crosses each line segment (e.g. AB, BC, CF, etc.) once and only once. But it is impossible to draw a similar line in II. For example, the line drawn fails to cross the segment EF. Can you draw a line crossing each line segment in III?

III



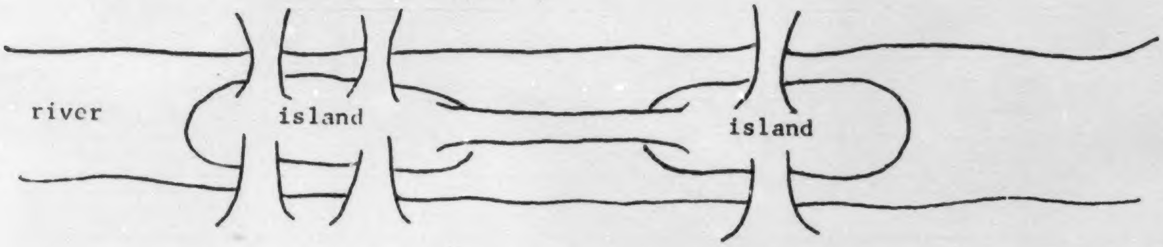
TAKE A TRIP

Can you take a trip through every door of this house without passing through any door more than once?



TAKE A WALK

Can you take a walk which will take you over each of the seven bridges and cross each bridge only once?


river
island
island

TAKE A FLIGHT

On an airplane flight there are four people:

The pilot
The flight engineer
The flight attendant
The passenger

Which would you choose to be? What are your reasons for your choice?

ANSWERS

Task Card 2

1. green 2. butter 3. two 4. skip 5. lamp

6. balloon 7. horse 8. boy 9. monkey 10. airplane

Task Card 3

1. The blue flower smelled good.
2. I can't tie my shoe.
3. The four astronauts were smiling.
4. The lion shook his head.
5. The man rowed down the river.
6. Scrambled eggs are good to eat.
7. The boy ran around the piano.
8. The twins look very much alike.
9. The man was hurt but is still alive.

Task Card 4

1. box 2. glass 3. go 4. run 5. eat

6. cool 7. warm 8. rest 9. witch 10. load

11. look 12. jump 13. walk 14. bush 15. wait

16. sun 17. dress 18. frog 19. sing 20. friend

21. cry 22. help 23. bake 24. need 25. long

26. decide 27. big 28. long 29. answer 30. run

31. ear 32. want 33. cut 34. throw 35. play

36. bake 37. sad 38. doll 39. laugh 40. tall

Task Card 5

Then	Day	Sell	Thing
Hen	hay	bell	king
ten	say	tell	bring
men	play	shell	wing
pen	clay	well	spring
when	bay	fell	string
den	stay	spell	ring